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ANNEX

THE

TENTH EXHIBITION

OF THE

MASSACHUSETTS

Charitable Mechanic Association,

AT

FANEUIL AND QUINCY HALLS,

IN THE CITY OF BOSTON,

SEPTEMBER, 1865.

BE JUST AND FEAR NOT.

BOSTON:
PRINTED BY WRIGHT & POTTER, No. 4 SPRING LANE.
1865.

☆ MASS. HIST. SOC.

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SEPTEMBER AND OCTOBER, 1865.

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GOVERNMENT OF THE ASSOCIATION

FOR 1865.

PRESIDENT,

JOSEPH T. BAILEY.

VICE-PRESIDENT,

JONAS FITCH.

TREASURER,

OSMYN BREWSTER.

SECRETARY,

JOSEPH L. BATES.

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JOSEPH F. PAUL,
GEORGE H. DAVIS,
WILLIAM W. CLAPP, Jr.,
HORACE JENKINS,
SYLVANUS A. DENIO,
WILLIAM MARBLE,
CHARLES TORREY,
ALBERT J. WRIGHT,
JOB A. TURNER,
WILLIAM CUMSTON,
SAMUEL P. TOLMAN,
ALFRED A. CHILDS.

BOARD OF MANAGERS OF THE EXHIBITION.

The Government of the Association, organized as follows, constituted the Board of Managers of the Exhibition:

EXECUTIVE COMMITTEE.

To prepare all circulars and advertisements; to appoint the Judges and give them their instructions, receive and examine their reports, and award the premiums to the contributors.

JOSEPH T. BAILEY, *Chairman*,
JONAS FITCH,
OSMYN BREWSTER,
JOSEPH L. BATES, *Secretary*,
JOSEPH F. PAUL,
WILLIAM W. CLAPP, Jr.,
CHARLES TORREY.

COMMITTEE OF ARRANGEMENTS.

To have the entire charge of the Halls of Exhibition, the reception, preservation and display of all the articles contributed, and attend to the delivery of them at the close of the Exhibition. They are to prepare such Rules and Regulations as they may deem expedient.

The Vice-President, as Chairman of this Committee, is to exercise a general superintendence of this department; nominate all committees of sections, clerks, police, and other assistants which may be necessary, subject to confirmation by the Committee.

JONAS FITCH, *Chairman*,
GEORGE H. DAVIS,
HORACE JENKINS,
SYLVANUS A. DENIO,
WILLIAM MARBLE,
ALBERT J. WRIGHT, *Secretary*,
JOB A. TURNER,
WILLIAM CUMSTON,
SAMUEL P. TOLMAN,
ALFRED A. CHILDS.

RULES AND REGULATIONS OF THE TENTH EXHIBITION.

I.

Articles intended for exhibition and premium will be received at Quincy and Faneuil Halls from Monday, September 11, to Saturday, September 16. Checks for the same will be given, which must be presented when the articles are returned.

II.

The Exhibition Halls will be opened for the reception of visitors on Wednesday, September 20, at noon, and will close on the evening of October 11.

III.

Articles for sale will be labelled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Committee.

IV.

Proof of origin must be furnished, if required, for every article offered for premium.

V.

A Board of Judges will be appointed to examine and report upon all articles presented, unless the owners shall, at the time of their entry, give notice that they are for exhibition only; and the Executive Committee will award premiums on such articles as shall be declared most worthy. The premiums to be delivered as soon as they can be prepared.

VI.

The morning of each day, until nine o'clock, will be appropriated to the Judges; and no other persons will be admitted during the time thus appropriated.

VII.

It is particularly requested that every person who offers a new machine, or an improvement on an old one, will leave at the Clerk's office a description of its peculiarities, that the attention of the Judges may be called thereto. Contributors or Judges desiring to communicate with each other will leave their communications with the Clerk at the central office.

VIII.

Whenever the articles will permit, the contributors are requested to exhibit their goods in glass cases. All articles deposited will be at the RISK OF THE OWNERS. The most effectual means will be taken, through the agency of the Police and otherwise, to guard and protect the property in the Exhibition; but the Managers cannot be responsible for losses that may be occasioned by theft, accident, or damage of any kind.

IX.

Gunpowder, Fireworks and dangerous implements, will not be allowed in the Halls; and the Managers reserve the right to reject any article that they may deem objectionable.

X.

Contributors to the Exhibition will not be permitted to furnish samples or make gifts to any one within the Halls, whether employed or not, unless by permission first obtained and it will be the endeavor of the Managers that all articles shall be returned to the owners without diminution or loss.

XI.

Owners or agents, offering articles for premium or exhibition, will receive tickets of admission; *but in no case transferable.* If transferred, the right of admission will be forfeited.

INSTRUCTIONS TO THE BOARD OF JUDGES.

The Judges are invited to examine with great care every article submitted to their inspection, and to make such report as its merits may, in their opinion, warrant.

There will be four grades of award, viz.:—

No. 1. A GOLD MEDAL, which will be granted only for very valuable and meritorious inventions or improvements.

No. 2. A SILVER MEDAL, for articles of superior workmanship, new applications of material, and improvements in construction.

No. 3. A BRONZE MEDAL, for articles of superior workmanship, but of less importance or utility.

No. 4. A DIPLOMA, for all other articles deserving a favorable testimonial.

Whenever a Medal is given it will be accompanied by a Diploma.

Each Committee of Judges will appoint its own Chairman, and notify the Secretary of the same; and report through their Chairman to the Executive Committee.

Each Committee will receive a book containing a list of the articles they are to examine, and also a book in which to write their reports.

Should the Judges require the attendance of a contributor, for the purpose of explaining an article submitted, they will please give notice at the office in Quincy Hall.

The Halls will be open for the Judges each morning, from half past 7 to 9 o'clock.

Should any vacancy occur in the Board of Judges, it is desired that early notice may be given to the Executive Committee.

It is the earnest wish of the Board of Managers that the examinations by the Judges should be made very soon after the day of opening, while the articles are new, well arranged and in their best condition; and the reports upon their merits supplied immediately afterwards, that the awards of Premiums may be announced to the public before the close of the Exhibition.

Reports may be sent to the office of the Executive Committee in Faneuil Hall.

REPORT OF THE MANAGERS.

The Tenth Exhibition of the Massachusetts Charitable Mechanic Association was inaugurated under peculiar circumstances, and with some fears on the part of some of its friends, lest it might prove less successful than those of former years. The American rebellion had interfered with the triennial exhibition, and it was deferred until the present year. Although the Managers were aware that the industrial pursuits of the country had suffered little or nothing by the war, yet they were in some doubt whether the response from inventors and manufacturers to send in the products of their brains and hands, would be so general, as to make the Tenth Exhibition successful. But we are gratified to be able to state, that in the number and value of articles entered, in the crowd which thronged the halls, in the receipts from tickets, and in the general satisfaction expressed by an appreciative public, the Exhibition exceeded that of any former year. We were enabled to show to the world, that while the energies of our people were taxed to support an internal war, more universal and deadly than that of any other country in the civilized world, mechanics, inventors, manufacturers and artists had been enabled to continue their pursuits with scarcely any interruption. The halls groaned under the burden which the workshops of the country had poured into them, until every inch of room was occupied. The doors were no sooner thrown open to the public than the journals of the city, by extended reports and most favorable notices, proclaimed the Exhibition a grand success. We are indebted to editors and reporters for the efficient aid rendered through the columns of their papers.

We would, also, acknowledge our indebtedness to the numerous contributors—including mechanics, with the useful products of their workshops; the inventors, who have, during the past five years, increased the conveniences and comforts of life; the artists, who have immortalized the heroes of the war, or copied the beautiful in nature upon the canvas; the ladies, who, with untiring industry and skill, wrought all manner of useful and ornamental work—and trust they will all reap a rich reward from the public, for the sacrifice of time and money which they may have made to place their articles in our halls.

We present our thanks, also, to the Judges, upon whom devolved an important and delicate duty. Many of them devoted much time to the different departments which were assigned them, and we think our contributors will be generally satisfied with the awards made and the opinions expressed. When it is known that a large proportion of the Judges were not members of the Association, and from different avocations and walks in life, it will be understood that they have discharged their duties in an impartial manner.

The Exhibition was opened September 20th, and closed October 11th.

The number of awards was as follows:—

Gold Medals,	33
Silver Medals,	140
Bronze Medals,	200
Diplomas,	355
Total,	728

The usual Address was delivered on the evening of October 4th, by Hon. A. H. BULLOCK, of Worcester. It was listened to by a large audience, and was one of the most able and eloquent efforts of the distinguished orator, whose fame has extended beyond the borders of our own New England, and who is now the Chief Magistrate, elect, of this Commonwealth. The oration will be found entire in this document, at the close of the Reports of the Judges.

At the conclusion of the services in Tremont Temple, the members of the Association, with their invited guests, repaired to Horticultural Hall, where the customary levee was held. We were favored with short and well-timed addresses from various distinguished gentlemen from this and adjoining States, and the occasion, which was enlivened with music and repartee, was highly enjoyed by all present.

The Managers are happy to feel that their labors (gratuitously given,) have been appreciated by a generous public, and they trust the Exhibition will be of lasting benefit to the community, and tend to give a new incentive to all kinds of industrial pursuits.

As a full catalogue of all the articles entered was published and extensively circulated during the Exhibition, it was deemed unnecessary to include in the Reports of the Judges any articles other than those favorably reported upon or noticed by them.

JOSEPH T. BAILEY,
Chairman of Board of Managers.

BOSTON, December 6th, 1865.

REPORTS OF THE JUDGES.

REPORTS OF THE JUDGES UPON THE VARIOUS ARTICLES EXHIBITED AT FANEUIL AND QUINCY HALLS, AT THE TENTH EXHIBITION OF THE MASSACHUSETTS CHARITABLE MECHANIC ASSOCIATION, CLASSIFIED UNDER THEIR PROPER HEADS, WITH THE NAMES OF THE JUDGES, AND THE AWARDS OF THE COMMITTEE ON PREMIUMS.

NEW INVENTIONS AND MACHINERY.

JUDGES:

J. C. HOADLEY,	JAMES B. FRANCIS,
N. HENRY CRAFTS,	LOUIS D. BARTLETT,
L. A. CUTLER,	JOHN THOMPSON,
EDWIN REYNOLDS,	JOHN SOUTHER,
C. E. RYMES,	FREEBORN ADAMS, Jr.,
LOUIS OSBORN,	GEO. T. MCLAUTHLIN,

S. F. GATES.

AIR AND STEAM-ENGINES AND STEAM MACHINERY.

C. E. RYMES, LOUIS OSBORN,
GEO. T. MCLAUTHLIN, *Sub-Committee.*

19. AMERICAN SAFETY STEAM-ENGINE COMPANY, *Boston.* Brayton's Patent Steam-Generator and Engine. The Engine exhibited was rated at six horse-power, was in operation, and occupied, including the boiler, very little ground space.

Mr. Brayton claims (which claims the Committee are not fully prepared to endorse,) "that he has produced a Steam-Generator, which is perfectly safe from explosions; that the parts may be heated redhot from the absence of water, and the supply again introduced, without any damaging effects."

Scientific tests were made of the power of the Engine, and efficacy of the Generator, which showed that the Engine worked well, and that the boiler was a rapid steam-generator, evaporating over 7½ lbs. of water to a pound of coal. Combustion was carried on slowly and thoroughly, and a low temperature shown in the smoke-pipe.

An important feature is, that it can be easily taken apart for transportation by mules, whereas in ordinary boilers it is frequently necessary to ship the materials and make the boilers on the premises where they are to be used, involving great expense.

The Engine was of the oscillating pattern, and was fitted with an ingenious cut-off, governed by the regulator, which worked well.

It is believed that the Generator can be made at twenty-five per cent. less cost than the ordinary boiler. The Committee consider it, as a whole, an important invention. *Gold Medal.*

71. E. H. Ashcroft, *Boston.* Steam Gauges, Low Water Detectors, and other Instruments. These instruments are well known, have a standard reputation, and some of them received Medals at the Exhibition of 1860. The Steam Gauge, designed for use on locomotives, is fitted with the duplex spring and chain connection, which secures steadiness of motion to the indicator. The Gauges exhibited for stationary uses have a corrugated disk spring, made by a new process, which Mr. Ashcroft has patented, which renders the spring less liable to "set" under high pressures. *Bronze Medal.*

87. S. F. Summers & Co., *Boston.* Oscillating Steam-Pump. An ingenious arrangement of good workmanship, but rather complicated. *Diploma.*

104. B. F. Campbell, Sup't Union Warming and Ventilating Co., *Boston.* Steam Heating Apparatus. This Apparatus is so constructed that if little heat is required, a very slow fire furnishes it without raising steam into the radiators which are placed over the furnace, whereas a quick fire will immediately generate sufficient steam to bring the whole of the extensive surface of the said radiators into action, furnishing a mild, soft heat to a large body of air, which is passed into the rooms through conducting pipes. Steam may also be carried to any rooms, where it is not convenient to carry air-pipes, by steam-pipes connecting to steam radiators in the same manner as in cases where other descriptions of steam heating works are used.

This Apparatus has received very commendatory testimonials from high sources. *Silver Medal.*

124 and 778. S. E. Chubbuck & Sons, *Roxbury.* One Upright ngine, and one Fan Regulator attached. This Engine is about

5 inches diameter of cylinder, and 12 inches stroke, of chaste design and very superior finish, and is complete in all its details, including force-pump and regulator.

The Fan Regulator exhibits a new method of counterbalancing, a spring being neatly encased in it, instead of having the ordinary balance weight suspended from it by a chain. The spring arrangement renders it more compact and materially improves its appearance.

Silver Medal.

127 and 749. S. H. ROPER, *Roxbury*. Two Hot Air Engines. The beautiful symmetry of design, harmonious proportion of parts, careful arrangement of details, and apparent thoroughness of construction exhibited in these Engines, all conspire to enforce the conclusion that Mr. Roper has done much towards reducing the Caloric Engine to a utilitarian standard, and that he has brought the manufacture of the two sizes here shown to a practical system. The working cylinder is placed directly over the fire-pot, and is separated therefrom by a partition lined with fire-bricks. The air from the fire-pot is conveyed to the cylinder through an extension valve-chamber for the purpose of securing the valves from overheat.

While accomplishing the desired end, it would seem that by the use of this extension valve-chamber, the effectiveness of the Engine must be slightly reduced, as the intensity of the heat of the air as it comes from the furnace is thus lessened, and as the passage leading from the valve to the working cylinder has to be filled at every stroke with condensed air.

Nevertheless, as a whole, too much praise can hardly be awarded to Mr. Roper, for, relying upon the report of the Rumford Committee of the American Academy of Arts and Sciences, dated Feb. 9, 1864, it would seem that while Mr. Ericsson's Engines were consuming about 14 pounds of coal to the horse-power per hour, Mr. Roper's were using not over 5 pounds per hour per horse-power. *Gold Medal.*

129. R. H. FLANDERS, *Charlestown*. Small Steam-Engine. A commendable production, as the efforts, the first, of a young man not skilled in machinery.

134. CHARLES WARD & CO., *Lawrence, Mass.* Brigham's Patent Pipe Drainer or Steam Condenser. A compact, well-made article, simple in construction, and we should judge cannot fail to operate satisfactorily. *Diploma.*

168. MCKAY & ALDUS, *East Boston*. Steam Boiler. The steam for the Exhibition was furnished by this Boiler. It was a fine specimen of boiler work, showing excellent machine and hand rivetting, and good flanging. *Diploma.*

188. SHAW'S UNION AIR-ENGINE COMPANY, *Boston*. One 12-inch Single Acting Air-Engine, with Steam. This Engine embraces more of new and meritorious invention than any other machine that comes under our notice.

While many of the most noted inventors in Caloric Engines have vainly striven to save a considerable portion of the heat of the exhaust air by regenerators and various other expedients, Mr. Shaw has accomplished that object by passing the exhaust through a tubular boiler, by which means he uses the otherwise waste heat in generating steam, which he passes into the fire-pot along with the cold air supplied by the air-pump, an open communication existing between the steam-generator and fire-chamber. This may be closed at pleasure and no danger ensue, as the safety-valve is adjusted for a low pressure, and as the heat of the exhaust air is not sufficient to create an explosion, even if the boiler is allowed to go empty, and water supplied while the Engine is in full operation.

The Engine was in operation during the Fair, but drove no machinery, neither was it tested. We were, however, shown by pressure gauges the difference of working pressure in the cylinder with the steam connection open and with it closed, which indicated (making allowance for the pressure required to run the Engine light,) that the effective power was about doubled when using the steam. It may be operated as a Union Air and Steam-Engine, or as an Air-Engine alone.

It is claimed that the amount of coal consumed is somewhat less when using the steam than it is when working with air alone, and that whatever is gained by using the steam-generator is gained at no additional cost for fuel.

One important feature, especially in Engines of any considerable power, is the practicability of starting the Engine without outside aid, by passing the products of combustion, while "getting up heat," through the steam-generator, thus obtaining sufficient pressure of steam to start the Engine. The arrangement of the air-pump is noticeable, the working cylinder answering the purpose also of the pump cylinder, by using a trunk piston and a single connecting rod, the cold-air valves being at the top and the hot-air valves at the bottom of the cylinder. This arrangement reduces the number of parts required, and renders the construction of double acting Air-Engines eminently practicable.

Another very important feature in Mr. Shaw's Engine is the system of cold-air and steam passages through all parts of the Engine liable to overheat, including the valves and valve seats. By this arrangement metal cylinder packing and oil lubrication are rendered feasible, and the valves placed, without endangering their durability, immediately between the fire-pot and cylinder, thus avoiding waste of compressed air. The independent feed arrangement shown on this Engine is a valuable adjunct to any Engine consuming its fuel under pressure, as it allows of feeding the fire without interrupting the motion of the Engine. The speed of the Engine is regulated by throttling the air-pump delivery, by which means, when the Engine is working light, its whole power is held in reserve for instantaneous use. We, at first, believed this method open to objection, but on further investigation are of opinion that its important advantages are obtained without additional wear, consumption of fuel or other objectionable result.

When this Engine shall have been as far perfected in the details of construction, as it now is in those of invention, we cannot but believe that it will take high rank as a first class motor.

It has received an award of the American Academy of Arts and Sciences from the Rumford Fund, and in the report of their Committee of Feb. 9, 1864, we find it stated that these Engines "of two or three horse-power, consumed about 2½ pounds of coal per horse-power per hour."

Your Committee recommend a *Gold Medal*, and only wish that these apparently extraordinary improvements in Air-Engines could receive a more distinctive award.

227. Blake & Co., *Boston.* Blake's Patent Steam-Pump. This Pump was used to feed the boiler that furnished steam for the Exhibition. The steam-valves are worked by the steam piston, admitting of great simplicity of construction, and rendering the Pump very compact. The arrangement of the valve is such that the steam is always in communication with the piston in one end or the other of the cylinder, which renders it certain and positive in its operation. These pumps have been in use two years, and their durability and effectiveness well established.

The construction of the water-valves is very simple, subject to very little wear, and very easily repaired by any person of ordinary skill.

Silver Medal.

232. Harris, Cutter & Co., *North Cambridge, Mass.* Ice Tools. These are strong and well made tools of the ordinary description in use for cutting ice on the pond. *Diploma.*

286. T. S. Clogston & Co., *Boston.* Steam Radiators, Steam-Pipe, Steam Boiler, and three Valves. These articles constitute a heating apparatus, designed for either hot water circulation, high-pressure steam or low-pressure steam.

The Boiler is very simple in its construction, a rapid generator of steam, and is made in sections, all of which are of cylindrical form and capable of sustaining high pressure. They can be made of any size by using more or less sections.

The Radiators are also made in sections, are of cast-iron, present large radiating surface, and all the parts, like the Boiler, being cylindrical, are capable of sustaining high pressure.

The Steam-Pipes are similarly constructed, and the valves are well adapted for the purpose for which they are designed. *Silver Medal.*

309. J. C. Hobbs & Son, *West Cambridge, Mass.* Gothic Engine. This is a thoroughly made and well finished machine. *Diploma.*

325. Pratt's Patent Tube-Scraper. Rather complicated, but believed to be a good thing in careful hands. *Bronze Medal.*

340. Hancock Patent Steam-Blower Company, Charles B. Hatfield, Agent, *Boston.* Hancock's Patent Steam-Blower. This method of creating a blast in boilers and other furnaces consists in arranging across a properly shaped funnel, opening into the space below the fire, several small steam-pipes, having minute perforations through which steam from the boiler is allowed to blow, thus creating a blast, the force of which is in proportion to force of steam applied. This combined steam and air blast is said to economize fuel and preserve the grates. It certainly makes a very simple and cheap blower, which is always in order, ready for use as soon as any pressure of steam is obtained, not being dependent upon the motion of an engine, and subject to no appreciable wear, and has been found quite efficient for moderate blasts, when properly applied. *Silver Medal.*

341. James Ross, *Somerville, Mass.* Prepared Packing for Steam and other Joints. This Packing is made of paper or pasteboard, chemically prepared. The inventor claims that it will effectually resist any action of water, steam, oil or grease. He states that he has used it nearly a year with the best results, in places where rubber packing would not last a month. It may prove a good invention, and a very economical packing, but needs the test of time in practical use. *Diploma.*

383. N. Jenkins. Steam-Valves and Water-Faucets. These articles have rubber ball valves, and are a decided improvement on the ordinary metallic valve for many purposes. *Bronze Medal.*

444. Swampscott Machine Company. Portable Engine. This is a horizontal Portable Steam-Engine, well adapted to general use, substantially built, and of good style and finish. It has Howell's patent balanced slide-valve. *Bronze Medal.*

453. New York Steam-Engine Works, *New York.* Portable
gine. The main feature in this machine is the boiler to which the
gine is attached. It is made under Dickerson's patent, which has
acted considerable notice, especially for marine boilers. The
ncipal advantages claimed by the contributors for these boilers are:

1st. The peculiar application of the tubes, which secures a rapid and free circulation of water, the tubes being elevated at one end, the fire passing up around them, and the water circulating within them.

2d. The small size and weight of boiler required for a given power, the ground space occupied being no more than what is required for the fire-box.

3d. Their accessibility for cleaning and repairs, cast-iron plates being bolted to the boiler, which, when removed, expose the ends of the tubes and other portions of the interior.

4th. Cheapness of construction.

The Engine is strongly built and simple in construction, and was operated during the Exhibition. Some tests were made to show the evaporating power and economy of fuel, which indicated favorable results. *Silver Medal.*

460. L. J. Knowles & Brother, *Warren, Mass.* Knowles' Patent Steam-Pump. Knowles' Patent Safety Boiler Feeder. This Pump received a very favorable notice and a Gold Medal at the Exhibition of 1860. Since that time, improvements have been made in the valve motion. The specimens exhibited fully sustain their well earned and deserved reputation. We think the improvements made since 1860 merit a *Diploma.*

The Boiler Feeder is designed to control the action of the Feed Pump. By its use the water is maintained at an even height in the boiler. In case of any failure in the water supply, it causes an alarm whistle to blow before any material loss of water takes place. It is constructed on scientific principles, is very simple, and is positive in its action.
Silver Medal.

486. Savery & Stuart, *New York.* Patent Expansion Ferrule and Cap. This is a simple, ingenious and valuable contrivance for repairing boiler tubes. They are easily applied, even when the boiler is under pressure. Most engineers having charge of marine tubular boilers have often been placed under circumstances which would render them worth many times their cost. *Silver Medal.*

493. New England Tube Brush Company. Tube Brushes. This Brush consists of flattened steel wires, set spirally in a twisted centre arbor, and tinned, by which means the wires are more securely held in place, being thus soldered to the centre spindle. It is believed to be a valuable improvement, well adapted to the cleaning of boiler tubes. *Bronze Medal.*

496. C. W. Kimball & Co., *Springfield, Mass.* Model Engine with Stop Motion. This Engine illustrated a device by which the steam

gate is closed whenever the speed of the Engine, from any accident, is increased beyond any desired limit. A trip bolt is attached to the balance wheel near its periphery, which is thrown out by centrifugal force, tripping a catch, and allowing the steam-gate to close by means of a weight suspended to the hand-wheel. *Bronze Medal.*

509. JOHN H. FLAGLER, *Boston.* Boiler Tubes and Boiler Iron. The Tubes are good specimens of the well known productions of the Paschal Iron Works.

The Boiler Iron is a good specimen of C. No. 1 Iron, neatly flanged. *Diploma.*

512. GEO. DWIGHT, Jr., & Co., *Springfield, Mass.* Steam Pump, Earle's Patent. This Pump was in operation during the Exhibition, and worked very satisfactorily. The steam-valve is a balanced solid piston, operated by the exhaust steam from the cylinder, and so far as the Committee could judge, has no "dead points."

The water-valves are simple and durable, and the Pump generally is made in good style and well finished. *Silver Medal.*

539. UNION STEAM FAN BLOWER COMPANY, *Boston.* Five Steam Fan Blowers. These Blowers are of two descriptions, one being the same as the Hancock Steam Blower (see No. 340,) with the addition of a small fan-wheel placed so that the steam jets shall blow upon it, and, according to the statements of the proprietors, "cause it to revolve rapidly, drawing into the furnace a steady and rapid current of air, giving double the quantity of air with half the steam required in the use of the Steam Blower without the Fan attached."

Of this we have no positive means of judging and must leave it to practical use to decide.

The other description of Steam Fan Blower exhibited consists of what in water-motors is known as the "Barker Mill," which, in this case, is quite small and driven by steam. On its shaft is an ordinary Fan Blower. This makes a remarkably simple Fan Blower for any and all purposes. The steam from the "Barker Mill" may be conveyed away or allowed to pass along with the blast, combining the advantages of using at will air and steam or air alone. *Silver Medal.*

543. LANG & DELANO, *Boston.* Botticher's Indestructible Packing. This is a finely pulverized material resembling soapstone, which is thoroughly worked into and freely used on and around cotton packing in the stuffing-boxes of engines, &c. No grease or oil is to be used with it. The proprietors state, that, under its use, "the rods will soon assume a perfectly smooth appearance," and, that "when the box is once filled tight the packing remains so for months." It has been

subjected to trial on two United States steamers, and is very highly recommended by the officers in charge. It is worthy of a trial.

Bronze Medal.

634. **Steam Boiler Feeder Company**, *Worcester, Mass.* Case of Steam-Valves, Chronometer Governor and Valve-pressure Regulator. These articles received a Silver Medal at the Exhibition of 1860, of which they were eminently worthy. *Diploma.*

645. **Richard Martin**, *Boston.* Martin's Patent Metallic Packing. This Packing is designed for use on piston rods, &c., and the inventor claims for it, reduction of friction, durability, and economy, and that no creasing of rods will take place under its proper use.

Diploma.

651. **American Steam-Gauge Company**, *Boston.* Gauges and other instruments. These were elegant specimens of well-known instruments manufactured by this company, many of which, as good inventions, received Medals at former Exhibitions. They made an elegant display and attracted the attention of all observers interested in such instruments. *Diploma.*

661. **Wheelock & Wheeler.** Wheelock's Patent Steam-Cylinder Packing. This is an ingenious combination of eight pieces of cast-iron in such a manner as to make a complete piston-packing, without springs or set screws to cause undue friction and wear, the ring sections being kept out against the cylinder by steam admitted within the piston, by which means it is made self-adjusting even to cylinders very badly worn. Exhibited in connection with the Packing is a practical method of applying it to old engines of any size and description without removing the piston, the new arrangement filling the space occupied by the old packing-rings. *Silver Medal.*

715. **Clark's Patent Steam and Fire Regulator Company.** *New York.* Two Clark's Patent Steam and Fire Regulators. This apparatus received a Silver Medal at the Exhibition of 1860. It is simple, efficient, and truly valuable, as its extensive and rapid adoption has proved. *Diploma.*

754. **Dean, Curtis, & Co.** Steam-Valves. These are well-finished valves of the Woodman and Jenkins Patent, the valve being a rubber ball. *Diploma.*

787. **B. T. Sturtevant**, *Boston.* Fan Blower. This is a first class Blower for general use. *Diploma.*

800. **Lyman Kinsley, & Co.**, *Cambridgeport, Mass.* Wagon Axle Moulds, finished Wagon Axles, Steam Forge Hammers. The Wagon

Axles and Moulds were fine specimens of workmanship, especially the forging of them. *Diploma.*

The Steam Hammers, one vertical and one horizontal, were in operation during the Exhibition. The valve-gear is novel and very ingenious. By the movement of a hand-lever, the hammer is made to strike a very heavy, medium, or very light blow, and the changes from one to the other, or to a full stop are made instantly, and are under the most perfect control of the operator. The horizontal hammer is worked by a detached steam-cylinder which allows the hammer helve to be adjusted to any position desired, and the helve is so held in its journals and housings as to be placed in any desirable position, as is also the anvil, the advantage of which arrangements will be highly appreciated in forging peculiar shapes and angular and taper work, as well as in plain forgings. *Gold Medal.*

801. E. W. STRANGE, *Taunton, Mass.* Tackle Blocks and Hand Boiler Punch. The Blocks are of iron, of the ordinary construction.

The Screw Punch differs from most other similar machines by a simple arrangement which allows the punch to revolve in its socket, which renders the cutting part of the punch much more durable.

Diploma.

805. PUTNAM MACHINE COMPANY, *Fitchburg, Mass.* Steam-Engine. This engine furnished the power for the Exhibition, and is of the same style as the one furnished for the Exhibition in 1856. It has poppet valves worked by a rotating shaft which is geared to the crank-shaft. The time of closing the steam-valves is regulated by the governor acting upon drop-levers, which means controls the velocity of the Engine, without throttling the steam, and secures the advantage of expanding the steam in the cylinder. We find material improvements have been made in this Engine since it was exhibited in 1856, tending to the more perfect regulation of speed, simplicity of construction, and durability. Its performance was most satisfactory, and, for symmetry of design and excellence of workmanship it is not excelled.

Gold Medal.

900. I. S. HILL, *East Boston, Mass.* Four Steam Indicators. Mr. Hill's extensive experience in the practical use of these instruments, in testing steam-engines, showing the accuracy with which the valves are set, the pressure and the expansion of the steam in the cylinder, the power imparted by the engine, and the amount of power required to drive various kinds of machinery, has taught him fully what is required in such instruments, and is a sufficient guarantee that these having been made by himself will prove as perfect in their operation as they are complete in every detail of their construction and finish.

Silver Medal.

990. John S. Howell, *Portsmouth, N. H.* Model of Steam-Valve. This is a balanced slide-valve, and the exhibitor illustrated that the friction was very much less than that of the ordinary slide-valve. Its construction is such as to render it perfectly practicable and durable. *Bronze Medal.*

RAILWAY MACHINERY AND LOCOMOTIVES.

John Souther, John Thompson,
Sub-Committee.

487. Faxon & Tripp, *Chicago, Ill.* Automatic Railroad Coupling. The Committee believe this to be the best Car Coupling, adjustable under all circumstances. *Bronze Medal.*

344. John C. Chapman, *Boston, Mass.* Bolt and Spike Puller. A tool the Committee think would answer the purpose well. *Diploma.*

617. George Stone, *Boston, Mass.* Tool for drawing Spikes. This is a good tool and answers a good purpose. *Diploma.*

872. Andrew Peterson, *Roxbury, Mass.* Brass Dome for Locomotives. Brass Dome Casing for Locomotives; a new design, one of superior workmanship. *Bronze Medal.*

580. King & Hargrave, *Boston, Mass.* Rail Joint. This joint is arranged with an iron fish on both sides of rail, slotted, and having a solid bolt with an oval head to pass through, and make one quarter turn. The Committee believe this to be an improvement over the bolt and nut fastening, as it is less liable to work loose, costs much less, and track can be laid much faster. *Bronze Medal.*

116. George S. Griggs, *Roxbury, Mass.* Patent Elastic Driving Wheel and old Tire. These wheels are cast with projections across the rim, into which are driven blocks of wood. The tire is heated and shrunk on to the blocks, and has no other bearing than the wood. The Committee made an examination of these wheels in use, and from statements of those having them in charge, should judge them to be of improved construction. *Silver Medal.*

116. George S. Griggs, *Roxbury, Mass.* Locomotive Boilers for burning Coal. An arrangement for burning coal that answers the purpose well.

160. Samuel W. Head, *New York.* Two Patent Railroad Forms. This Frog is composed of layers of wood and iron, bolted together for the purpose of making it elastic and yielding, to the blow of the wheel, when passing over it.

The Committee would recommend, from the evidence of practical men, who have had them in use, a *Silver Medal.*

310. Cummings & Winthrop, *Maine.* Automatic Railroad Switch. A good working model. This is an arrangement by which it is intended that the passing of a locomotive or car will change the switch when wrong, and thus prevent the going off the track.

The model works well, but without a practical test the Committee are in doubt whether the weight of the Car will be sufficient to move the weight of two long bars without riding over the rail.

480. Jacob Edson, *Boston, Mass.* Street Sweeper. A fine working model. It received a Silver Medal at the last Exhibition, and is intended for exhibition only.

133. Ammi White, *of Boston, Mass.* Bridge used for Fair. It has answered the purpose well, and the builder is entitled to much credit.

155. Wm. Almond, *Boston, Mass.* Two Fumigators. This is an arrangement of furnace and blower connected. Tobacco is burnt in the furnace, and the blower forces the fumes of the tobacco through the hole for the purpose of killing bugs, &c. The Committee have no means of proving its utility.

488. J. H. Emerson, *Boston, Mass.* Jack Screw. It is a double right and left screw; the only advantage is that it works much quicker with a loss of power.

844. C. Clark, *Portland, Maine.* Car Shackle. The Committee think this shackle does not possess any advantage over those in common use.

252. John Kinsman, *Salem, Mass.* Jacks. Lever Jacks, good for light work. The Committee cannot fully decide upon them, as they were not in working order.

339. Rowe & Richardson, *Worcester, Mass.* Floor Clamps and Jack Screws. A tool made for the purpose of forcing the boards together and holding them in laying of floors; an excellent one for the purpose. *Diploma.*

593. A. J. Safford, *Boston, Mass.* Railroad Brake. An arrangement of Brake which is under control of the engineer, by which he can in case of danger, apply the brake to the whole train in an instant.

The Committee believe it to be an improvement in its construction over any brake now in use, and would recommend a *Silver Medal.*

229. J. P. Woodbury, *Roxbury, Mass.* Street Railway Car. A complete working model, having the engine, boiler and track so connected that in passing around the the curves the engine and boiler [illegible]th the track, thereby avoiding the difficulty of breaking the

connecting pipes in passing curves. It also has an arrangement of friction rolls which enables it to pass round curves with ease. The above we believe to be an advantage over others now in use.

Silver Medal.

50. Models for Single Rails for Street Railways, and Nicholson Pavement. The Committee believe one great objection would be in the winter season, on account of its freezing the moisture in the wood and becoming very slippery for horse travel; also that it would not be durable.

28. **Samuel M. Cushing**, *Waltham, Mass.* Railroad Gate. A very imperfect model. The arrangement is very good; will answer the purpose well.

HYDRAULIC ENGINES AND APPARATUS.

Jacob B. Francis, N. Henry Crafts,
Sub-Committee.

135. **Titus H. Russell**, *Boston, Mass.*, and *Northfield, Vermont.* Model of Russell's Improved Jonval Turbine Water-Wheel. The general form and arrangement of the wheel and apparatus is that of the well known Jonval Turbine. The improvements claimed are in the forms of the chutes, gate and buckets. In order to diminish friction, the gate is mounted on friction rollers. The wheel is raised and lowered by means of revolving inclined planes placed underneath the step, and operated by a rack and pinion.

The model itself is a beautiful piece of work, exhibiting every part of the mechanism in the most perfect manner. *Silver Medal.*

174. **American Water-Wheel Co., A. Warren**, Agent, *Boston.* Model of Warren's Improved Turbine Water-Wheel. An important feature in this model is the globe coupling, by means of which the step is placed at any convenient point above the wheel. A Silver Medal was awarded for it at the last Exhibition, and a similar award was made for the water-wheel at the eighth Exhibition. No important improvements having since been made in the coupling or wheel, no premium is now awarded.

559. **George T. McLauthlin & Co.**, *Boston.* Model of Rider's Turbine Water-Wheel. This wheel was patented in 1858 and was exhibited at the eighth Exhibition of the Association, when a Silver Medal was awarded for it, and again at the ninth Exhibition, a Bronze Medal for the step-box.

The improvements made since the last Exhibition are confined to the forms of the buckets and chutes. In order to test the effect of alterations in the form of the buckets, &c., an automatic apparatus has been devised by which all the facts necessary to be obtained by experiment are self-registered.

This apparatus is of such delicacy that it is claimed differences of not less than one-twentieth of one per cent. can be detected. Over three thousand distinct tests have been made on this wheel with the aforesaid apparatus, the result of which has been, as we are informed, an increase of efficiency amounting to about ten per cent. This is quite an important gain. *Silver Medal.*

808. Plymouth Mills, J. Farris, Agent, *Plymouth, Mass.* Duplex Turbine Water-Wheel. This Wheel was exhibited at the last Exhibition, when a Bronze Medal was awarded for it.

604. Socrates Schofield, *Providence.* Improved Schofield Regulator for Water-Wheels. The invention of the Schofield Regulator or Governor for water-wheels introduced a new principle, which has been extensively applied during the last twenty-five years. By the old form of governors the gate was opened or shut at substantially the same rate of speed, whether the change of speed in the water-wheel to be corrected was great or little; a medium rate was necessarily adopted for the movement of the gate, and consequently a considerable time was necessary to correct a great change. By the Schofield Governor the gate is moved much more rapidly when there is a great change to be corrected than when there is a small change, which is what is wanted. The Governor exhibited claims to be a further improvement, by which the required rapidity of action is retained without the danger of moving the gate too much, which was liable to happen in some cases with the original form, thereby introducing injurious irregularities in the speed of the water-wheel, and of course in the machinery driven by it.

Bronze Medal.

18. Hawes & Hersey, *Boston.* Hersey's Patent Rotary Pump. This Pump is of great simplicity, producing its effect by means of a wabbling valve or diaphragm. It is said to be much used for pumping viscid liquids, such as syrups, oil, &c., which it is found difficult to do with many pumps. It is claimed that it has equal advantages in pumping water and other limpid fluids. This received a Bronze Medal at the last Exhibition. The Committee now award it a *Silver Medal.*

107. George Wingate, *Chelsea.* Rotary Fire-Engine and Force-Pump. Hose and Tank for water. The Committee were unable to obtain an interview with the exhibitor, and cannot state the particular uses or merits of the articles exhibited.

152. Albert L. Rice, *Boston.* Johnson's Garden and Fire Force-Pump. This is a Hand Pump of great simplicity and efficiency. It is

claimed that it will throw six gallons of water per minute a distance of thirty to forty feet, and can be easily worked by a lad six years old. The barrel of the pump is a brass tube about an inch in diameter and two feet long. It has two valves, each made of a boy's marble. The piston is a smaller brass tube, the inside of which forms an air-chamber. This simple combination is not liable to get out of order, and affords a double-acting force-pump by which a continuous stream of water of considerable power can be maintained, and is well adapted for watering gardens, washing carriages and windows, and for extinguishing fire if applied soon enough. *Silver Medal.*

408. THE TORRENT ROTARY PUMP CO., *Boston.* Knapp's Balance Pressure Pump. This is a piston and butment Pump. Some of the advantages claimed for it are as follows: The apertures for drafting and forcing the water are so arranged as to diminish the pressure, and consequently the wear, on the shaft. A single piston on the driving shaft doing nearly all the work, there is little strain and wear on the gears. The use of a single piston, it is also claimed, avoids any dead point. By the use of a water-chamber, the loss caused by carrying back the water in certain parts of the revolution of the piston is avoided. The use of the water-chamber also enables several bearings to be run without packing.

A Pump was exhibited in operation throwing a large volume of water. *Silver Medal.*

862. HENRY N. STONE, *Boston.* Edson's Pumps, viz.: Double Acting Power Pump; Rotating Vibratory Pump; Double Oil Well Pump; Deep Well Yard Pump; Fountain Force and Lift Pump; Yard Anti-Freezing Pump.

This collection of Pumps, intended for a great variety of purposes, are admirably designed and executed. The Double Acting Power Pump is intended for factories and fire purposes; it has a brass cylinder in an iron case, the space between the cylinder and case constituting an air-chamber. The valves at the top are so arranged as to prevent an accumulation of air, and it is claimed that the pump may be relied on for a draft of thirty feet. The valve seats both at top and bottom, as well as the plunger and rod, are of brass, and easily accessible.

The Rotating Vibratory Pump is a new double-acting cylinder pump operated by fast and loose pulleys. There are two cylinders, both in the same line, with a chamber between them containing a double crank. A continuous stream is kept up through both cylinders in the same direction. It is claimed that the water-course being straight and the flow continuous, the destructive effect of the water-hammer is avoided.

The Double Acting Oil Well Pump is intended for deep service; it consists of two boxes in one cylinder, working simultaneously in opposite directions, the piston of the lower one working through the centre of the upper, keeping up a continuous flow. It is claimed to be more durable under severe strains than the single-acting pump.

The Deep Well Yard Pump has a copper cylinder with beam boxes and working parts, surrounded by air and vacuum chambers in a conical iron case; this is placed in a well, at such depth as the service may require, being connected to the body above by a galvanized iron tube, through which the water is lifted and the plunger-rod plays. By means of the air-chamber the flow is continuous. Three pumps are said to be working satisfactorily at depths varying from twenty-five to one hundred feet.

The Fountain Force and Lift Pump involves the same principle and mode of action as the Deep Well Yard Pump, but in form is adapted for house use.

The Yard Anti-Freezing Pump also involves the same principle as the Deep Well Yard Pump; it is arranged as a force or lift pump. The working parts are all beneath the platform, and there is no water above the platform to freeze when the pump is not in use. *Silver Medal.*

884. P. C. Howe, *Boston.* Howe's Diaphragm Pump. The working parts of this pump are few and simple, the effect being produced by the alternating movement of leather or rubber diaphragms. If these can be made durable, its freedom from friction will render this a valuable pump. *Diploma.*

855. P. C. Howe, *Boston.* Howe's Pump Plunger. The ordinary cup-shaped leather packing of a double-acting pump is pressed against the barrel by a rubber cylinder placed inside the cup; the pressure can be adjusted by means of a set nut to any desired degree. *Bronze Medal.*

746. Calvin Horton. West's Improved Pump. Calvin Horton's Artesian Driving Well. West's Improved Pump was exhibited at the last Exhibition, and a Silver Medal was then awarded for it.

Calvin Horton's Artesian Driving Well is a simple and effective apparatus. As its name indicates, it is designed to be driven into the ground. It is simply a pipe of galvanized wrought iron, the lower part of which is pierced with small holes to admit the water; the bottom is shod with a cast-iron point a little larger in diameter than the pipe, in order to clear the way for the latter when driven. It, of course, cannot be driven into rock, but in ordinary ground it may evidently be driven to a considerable th at a very small expense. *Silver Medal.*

910. Henry B. Leach, *Boston.* Model of Leach's Improved Turbine Rotary Pump. The principal novelty in this Pump is the arrangement of the outlet, which is a spiral, the size of the inclined passage being diminished as it approaches the point of discharge.

By this arrangement the water is gradually ejected from the Pump, and a large saving of power is claimed over other rotary pumps, in which the water is abruptly forced against the orifice forming the outlet. The model exhibited was not in working shape, and the Committee were unable to determine whether the advantages claimed for it would be realized in practice.

387. E. R. Morse, *Boston.* Fire-Proof Safe. The principal improvement claimed for this Safe is its greater dryness, which is said to be accomplished by placing a lining of sheet-iron or tin between the cement casing and the wooden lining. We are informed that this feature, claimed as an improvement, was in use many years ago, and is extensively employed now. *Diploma.*

164. C. A. Gaylord, Agent, *Boston.* Two Lillie's Wrought and Chilled Cast-Iron Safes. This Safe has an inside cage of wrought iron, over which iron of a very hard description is cast. The box of the safe is cast in one piece; the door in another. This reduces the number of joints to the smallest possible number, which is claimed as beneficial in preserving the contents from injury from heat, by retaining the moisture evaporated from the fire-proof casing. It is also claimed that they have great strength to resist breaking from falling buildings. These safes are secured by Lillie's Monitor and Duodecagon Mental Combination Locks, having no key, but depending on the recollection of three or four numbers, which can be selected and changed at will. *Bronze Medal.*

559. George T. McLauthlin & Co., *Boston.* Two Wilder's Salamander Safes. An improvement introduced in these Safes for the purpose of preventing the dampness usually accompanying safes cased with plaster of Paris. This is claimed to be accomplished by means of a water-proof coating to the wooden case, which prevents moisture from being communicated to the inside of the Safe. *Bronze Medal.*

101. Andrew Bell, *Boston.* Ladies' Jewelry Safe. A very neat article, suitable for the chamber of any lady who does not use Attleborough jewelry. *Bronze Medal.*

484. Spaulding & Coffin, *Boston.* Empire Copying Press. The object of this Press is to furnish an effective press at the lowest cost. Every part is just as it comes from the foundry. The pressure is obtained by means of a fluted cam. *Bronze Medal.*

227. G. F. Blake, *Boston.* Water-Meter. A *good* water-meter is imperatively demanded by most of our large cities and towns, whose sources of supply of water are seriously threatened by inordinate waste. By a *good* meter the Committee mean one that shall be simple in construction, compact in form, always ready to start, having no dead points, working smoothly, with little friction and consequent wear of the parts, accurately measuring and registering, and last, though not least, to combine with these qualities cheapness of cost, and the least possible care and expense in repairs.

The high cost of the meters most in use at the present time prevents their application to general use, and thus restricts very materially the benefit which it is so desirable to obtain.

This Meter is an improvement on the original Blake Meter, and a patent has been applied for.

The original has been fairly and fully tested, is less costly, and is pronounced by the Superintendent of Meters in this city superior to any hitherto in use, requiring less care and expense for repairs by one-half than any other. One has been on trial in this city for two and a half years; having first been tested at the City Works and found to be correct. At the end of that time, no repairs having been made or found necessary, it was taken out and re-tested, and found to be as perfect in registry as at first.

This improved Meter has all the good qualities of the original, and is much simplified in construction, especially in the arrangement and operation of the valves. These improvements, which simplify the construction, and materially reduce the weight of metal, render this Meter, in the judgment of the Committee, the nearest approach to our definition of a *good* meter of any meter that has been subjected to the test of time. *Gold Medal.*

891. Henry Isham, *Hartford, Conn.* Water-Meter; patented in 1862. This is something entirely new in the water-meter department, and is very ingenious.

It consists of a circular horizontal bed-plate, having inlet and outlet orifices on opposite sides of the centre, and a vertical fixed shaft or spindle in the centre. Upon this bed-plate is fitted an upper plate, having four vertical cylinders arranged around the central shaft, with plungers fitted thereto. These plungers are connected by rods with a cross-bar or crank disk, which operates to rotate the upper plate horizontally around the central shaft. The action of the water, when set in motion, raises the plunger of the cylinder which happens to be over or partly over the inlet orifice; this operates upon the crank, causing the plate to which the cylinders are attached to revolve, carrying the cylinder already filled with water towards the outlet orifice, and bringing an empty one over the inlet. The crank is so adjusted, that when the cylinder that is filled arrives at the outlet orifice, its plunger is forced down, thus emptying it of its contents. This motion continues so long as the water is in motion; the several cylinders alternately filling and emptying themselves, and furnishing the rotary motion so desirable in turning the index register with certainty, and superseding the necessity of ratchet wheels, which are liable to get out of order.

It is claimed that this Meter is so arranged that it requires for the same service-pipe not more than one-half the weight of metal employed in other meters; that the water has a more direct course than it is possible to obtain in the horizontal reciprocating meters, thus saving friction and consequent loss of head; that the rotary movement obtained in this Meter supersedes the necessity of the double set of valves required in the horizontal reciprocating meters, thus rendering it more simple in construction; that the plungers being attached to a crank or its equivalent, must work to the full extent of their motion, making the measurement positive; that they cannot stop at a less stroke, as others may do, neither can they force out a cylinder head.

The Meter on exhibition was, by request of the Committee, taken to the repair shop of the Boston Water Works, and attached to the testing apparatus. It was made to operate with the water merely dripping, and the motion of the plungers hardly perceptible, and was run at the rate of five gallons per minute, filling a tank containing just seventy-five gallons in 14½ minutes, the register indicating correctly. This trial was made with the works inclosed in a glass case, so that the motions of all its parts could be seen. At a previous trial, when a metallic case was used instead of the glass one, the full pressure was put on, and the tank filled in 5¾ minutes, being ¼ of a minute better time than the meters in general use in this city, and indicating less friction. The weight of this Meter is about one-half that of the Worthington Meter of the same capacity; so that the inventor's claim appears to be established as to economy of material and diminution of friction.

The claim as to simplicity of construction over meters with double outside valves, as in the Worthington and old Blake Meters, appears to be well founded; but recent improvements in the Blake Meter make this claim doubtful. The Committee regard this invention as one that promises superior results; and if found, when tested by time, to work as well as the beautiful and highly finished model exhibited, they have no doubt it will rank first among meters; but as there is often so much difference between the first results of a nicely adjusted machine and those obtained after long use, we cannot give it so high a place as if its capacity to resist wear, causing leakage and imperfect registry, had received the test of time. *Silver Medal.*

314. Albert F. Hall, *Charlestown.* Drawing of a Worthington Duplex Pumping Engine. This is a finely finished drawing, not copied from another drawing; but is a correct representation of the engine now in use at the Charlestown Water Works, and was made entirely from measurements taken of the engine itself. This is the sixth drawing made by a young man only seventeen years of age; and evinces such extraordinary mechanical talent and skill in drawing, that the Committee feel it to be simple justice to recommend a *Bronze Medal.*

422. T. P. Pemberton, *Portsmouth, N. H.* Two Frames of Mechanical Drawings. Very good and well finished drawings, showing superior professional skill. *Diploma.*

484. D. N. B. Coffin, *Boston.* Three Drawings: Water-Gate, Steam-Plough, and Street Railway Car. Very well executed. *Diploma.*

484. D. N. B. Coffin, *Boston.* Specimens of Pattern Work. Two well made gear patterns, of excellent workmanship. *Diploma.*

816. E. C. Cleveland, & Co., *Worcester.* Thirteen Mechanical Drawings. Very good. *Diploma.*

826. T. M. Coffin, *Plymouth.* Water Faucet. A well made article, with a leather packing outside the barrel, so arranged as to cause the pressure to prevent leakage. *Bronze Medal.*

FILE MACHINERY, WOOD-WORKING AND NAIL MACHINERY, MACHINISTS' TOOLS, PRINTING PRESSES, PIN MACHINERY, QUARTZ-CRUSHING MACHINERY, &c.

Freeborn Adams, Jr.,
L. D. Bartlett,
Edwin Reynolds,
S. F. Gates,
Sub-Committee.

275. Park Brother & Co., *Pittsburg, Pa., by* O. Hunt, Agent, *Boston.* Black Diamond Steel. A large assortment. *Silver Medal.*

82. Jones, Boyd & Co., *Pittsburg, Pa., by* J. H. Roberts, Agent, *Boston.* Cast Steel. Assortment of Steel. *Bronze Medal.*

270. Whipple File Co., *by* Wm. P. Pierce, Agent, *Boston.* Cast Steel. *Diploma.*

There is very little difference in the quality of the Steel of Jones, Boyd & Co., and the Whipple File Co. That exhibited by Park Brother & Co. is decidedly finer in the fracture than the others. It is all very uniform and of great excellence, and in the highest degree creditable to American enterprise and skill.

839. **Winslow, Griswall & Holley**, *Troy, N. Y.* Bessemer Steel. The specimens exhibited are very beautiful, and open a new vista to the engineer in contemplating his resources. The strength, homogeneity and malleability of this material, and the convenience and comparative economy with which it can be procured, of any desired form and size, will lead to its extensive introduction for many purposes where wrought iron is now used. Its greater durability may lead to its general adoption for rails, when our railway companies shall be both wise enough and rich enough to practice true economy. For many other purposes, as locomotive and car axles and tires, it will probably come into use even more promptly than for rails. We award this steel the highest praise and a *Gold Medal.*

868. **Hussey, Wells & Co.**, *Pittsburg, Pa., by* **L. P. Hunt**, *Boston.* Circular Saw Plate. This is plate of rolled cast steel, designed for a circular saw, and is very handsome. This Company is very largely engaged in the manufacture of steel of all kinds and it is a matter of regret that they have not presented other samples of their well-known productions. *Silver Medal.*

270. **Whipple File Co**, *Ballardvale, by* **Wm. P. Pierce**, Agent, *Boston.* Machine-Cut Files. Best assortment of Files. The large Files exhibited by this Company are extremely well cut, very uniform and sharp, and have good corners. They are heavy, straight, and to all appearance, excellent. They do not exhibit any very fine-cut files. *Silver Medal.*

697. **Weed File Manufacturing Co.**, *South Boston.* Machine-Cut Files. The very limited variety of samples exhibited by this Company are of great beauty, and some very fine Files are of unparalleled fineness, evenness and sharpness. No Swiss watch-making, hand-cut files will bear comparison with these exquisite productions of American machinery. It seems likely that machines capable of doing such admirable work will also prove excellent on common files; but, at all events, in the field of very fine files they have no competitors. *Silver Medal.*

693. **A. N. Redman**, *Boston.* Machine-Cut Rasps. These are cut by a new machine. Only two pieces of iron partially cut on one side, with rasp teeth, are exhibited by Mr. Redman, and his machine is not on exhibition here. The Committee do not, therefore, feel that they can speak of the merits of the machine, and the samples of cutting cannot be criticized.

30. **Butler, Sise & Co.**, *Boston.* Hand-Cut Files. *Diploma.*

199. M. Gorman, *Boston.* Hand-Cut Files. *Diploma.*

571. Granite File Works, *Manchester, N. H.* Hand-Cut Files. *Diploma.*

All the above are well cut, well made Files. They are fully equal to the imported files.

255. Bradford & Co., *Plymouth.* Bradford's Improved Tack Leathering Machine. This machine takes tacks from a hopper, sticks them singly into leather, and cuts out a circular piece of leather, which remains under the head of the tack, forming a washer. It does its work rapidly and neatly, and is a useful little affair. *Bronze Medal.*

525. Lyon & Ford, *Schenectady, N. Y.* Model of Empire State Brick and Peat Machine. This Machine is said to have been in use in Albany and Troy, N. Y., for two years, and specimens of brick are produced said to have been made by it. The brick look very well, and the operation of the model would indicate that bricks might be formed by a machine of such construction. But the practical difficulties in the way of making brick regularly and extensively by machinery are known to the Committee to be so great, that they cannot speak confidently of any brick machine by the inspection of a model, or from a specimen brick. *Diploma.*

268. Tufts' Brick Co. Tufts' Brick Machine. This is a working Machine, just completed, said to have been tried successfully for a day or two, but no specimens of its work are exhibited. The Committee are unable, for reasons stated in connection with No. 525, to speak confidently as to its operation. It is very well constructed and seems well adapted to its purpose. *Diploma.*

269. Machine for Sharpening Fence Pickets. This is an inexpensive, efficient and useful device; cutting a point on a picket and leaving it smooth at one operation. *Diploma.*

627. L. F. Thayer, *Randolph.* String Machine. This is a neat device for cutting strings out of leather. It consists of a thin steel ribbon, coiled up like the main-spring, with an interval between the coils, governed by the diameter of a copper wire, wound up with it. *Diploma.*

690. D. Harrigan, *Boston.* Adjustable Wrench. This Wrench has a convenient and useful device for altering the position of the handle with respect to the jaws, so as to enable its use upon nuts not otherwise so easily accessible. *Bronze Medal.*

696. Calvin Gay, *Boston.* Cold Rolled Iron. This is round iron, designed for shafting, and is rendered round and smooth by cold rolling, so as not to require turning; it is at the same time very much stiffened by the operation. Its general employment, instead of turned shafting, turns entirely on the question of price.

696. Calvin Gay, *Boston.* Differential Pulley-Block. This is a convenient English device by means of which heavy articles may be hoisted and left securely hanging in the block without belaying the hoisting chain. Recommended to the attention of machinists.

Diploma.

163. Richardson, Merriam, & Co., *Worcester.* Small Cylinder Planing Machine. One Union Planing Machine. One Improved Daniels' Planing Machine. These are well known machines, not differing widely from the usual construction; well made and useful.

Diploma.

322. S. A. Woods, *Boston.* Woodbury's Patent Planing, Tongueing and Grooving Machine. This is a very convenient and useful modification of the well known Woodworth Planing Machine; well made and well arranged. A silver medal was awarded to this machine at the eighth and ninth Exhibitions. *Bronze Medal.*

805. Putnam Machine Company, *Fitchburg.* Planing, Tongueing and Grooving Machine. This modification of the Woodworth Planer, presents some novel arrangements of very considerable merit. It is handsomely designed, conveniently arranged, and extremely well made, and sustains the high reputation of the eminent firm who present it.

Silver Medal.

322. S. A. Woods. Saw Arbors. This large lot of Saw Arbors, of various sizes, must offer something to meet the wants of all persons using Circular Saws. They are well made, have solid connected bearings, and appear to be excellent. These articles received a Diploma at the last Exhibition. *Diploma.*

536. B. D. Whitney, *Winchendon.* Patent Sawing Machine. Improved Cylinder Planer. These Machines are very beautiful and useful. The first is a Saw Table, composed entirely of iron, having two Saw Arbors; the one for a Splitting Saw and the other for a Cutting-off Saw. Both Arbors are carried in the arms of a frame, which may be revolved at pleasure, so as to bring either Saw into use without change of belt, or any other change whatever. There is also a very convenient system of gauges for all purposes. The whole affair is admirable.

The Cylinder Planer has an arrangement of inclined Planes for raising and lowering the bed and lower feed rolls, while the cutting cylinder and upper feed rolls remain stationary. It is a very convenient surfacing Machine, and is extremely well made. *Silver Medal.*

83. M. J. Rice, *Boston.* Self-Lubricating Journal Boxes. This Box has a wick in the bottom and one at the side to supply oil by capillary attraction. Probably useful for rapidly revolving Journals. *Diploma.*

63. Joseph A. Talpey, *Somerville.* Self-Feeding Hand-Sawing Machine. This is an admirable improvement for the use of carpenters and other workmen in wood, who have not the advantages of steam or other power. It is a Circular Saw, arranged upon a low frame, with a balance-wheel and hand-crank, and a self-feeding apparatus, by means of which the work of the hand splitting saw is performed with much greater ease and rapidity. *Silver Medal.*

659. Patent Wood-Saw Company, *Boston.* Saw Blades, Frames and Fixtures. A very efficient toggle joint arrangement for tightening the Saw gives a distinctive character to this article. It is useful and convenient. *Diploma.*

766. Ephraim Parker, *Orange.* Model Machine for Turners of Wood. By a very ingenious arrangement of Combs and Cutting Tools, the machine is made automatic in its operations. Blocks of wood for handles, and other irregular forms, are put in a receiver, bored and turned by the automatic operation of the Machine. *Silver Medal.*

843. Betts, Davenport & Atwood, *Stamford, Conn.* Self-Feeding Ratchet. Patent Friction Clutch Pulley. Spring Top Oil Cans. The Ratchet is fed by a thumbscrew clamp friction, and can be adjusted at the pleasure of the operator, and can be made to give any required feed. The Pawl is a part of the handle, and requires no spring; the forward and backward movement of the lever engages and disengages the Ratchet. *Bronze Medal.*

The Pulley has an annular space inside of the rim; in this annular space is operated a toe or lever, by means of a wedge and spring, which is moved by the Shipper Handle. *Diploma.*

The Oil Cans are good injectors, and are not easily tipped over; have globular bottoms and flat tops. *Diploma.*

848. S. C. & S. Winslow, *Worcester.* Screw Floor Press and Jack. Screw Press for carpenters' use in laying floor boards.

755. S. F. Atherton, *Fitchburg.* Hoop Splitting and Shaving Machine. Exhibited in the last Exhibition, since which time some improvements have been made. *Diploma.*

761. James Massey, *Boston.* Vises. The common wrought iron Vise well made.

912. PATENT SCROLL SAW. Simple, compact, and very well made. *Silver Medal.*

13. A. D. WEYMOUTH, *Fitchburg.* Wood Lathing Machine. A Lathe for turning small articles of wood; arranged for an indefinite variety of forms, and securing uniformity in each. *Bronze Medal.*

894. BAY STATE IRON CO. Specimens of Plate Iron. Very good iron. Flanges well. *Silver Medal.*

89. J. J. WALWORTH & CO., *Boston.* Two Die Plates and Cutters. Gas-pipe tools of a good quality. *Diploma.*

890. POWER PUNCHING PRESS. A very convenient arrangement of parts for setting the Punch and Dies; also a very good stop-motion. Well made machine. *Silver Medal.*

143. J. D. LELAND, Agent, *Boston.* Storrs' Pressing Machine. This Press is for tailors' use, with a pressing iron attached to an arm. Pressure applied by the foot, and the pressing iron moved by hand. *Diploma.*

903. STEAM STONE-CUTTER. This machine is made to move on a railway on top of a marble or stone quarry, and is moved along by means of its machinery. The Cutters consist of several square steel bars clamped together, sharpened at the lower end, and worked up and down in an upright position. It cuts a long, narrow channel, several feet deep. The Cutters can be set at an angle. To appearance, a very excellent machine for the purpose. *Gold Medal.*

724. D. H. SHIRLEY, *Boston.* Patent Skates. These Skates are clamped to the sole of the boot by means of claws and screws.

496. RUSSELL'S PATENT CHUCK. Four-jawed chuck, working on right and left screws, with auxiliary screws for setting the jaws eccentric. *Diploma.*

559. G. T. MCLAUGHLIN, *Boston.* Centering Machine. Clamps the piece of iron to be centred between jaws operated by right and left screws, drills and counter-sinks both ends of the shaft at the same time. A labor-saving tool for machinists' use. *Diploma.*

759. J. B. KINGHAM, *East Bridgewater.* Nail Machine. This Machine grips the nail on the four sides, and makes the head to project on all sides nearly the same. *Bronze Medal.*

736. CAMPBELL, WHITTIER & CO., *Roxbury.* Patent Elevator. Machinery for elevating the carriage is arranged under the platform, goes with it, and consists of a combination of gears, driving the worms which work into upright racks bolted to guide posts. *Bronze Medal.*

751. D. H. Priest, *Watertown.* Wood-Turning Lathe. The piece of wood to be turned is fed between guides, and is carried along by feed rolls. The cutter is moved up or down on an inclined plane. The position of the cutting tool is controlled by a revolving template, which is made of such a form as to give the desired shape or taper to the piece turned. *Diploma.*

329. J. Mattison, *Brooklyn, N.Y.* Rotary Lever. A model. A wheel so arranged as to turn on an incline, with a cast-iron roll revolving on the upper edge of this wheel.

337. John J. McNutt, *Boston.* Twist Moulding and Fret Sawing. Fair specimen of workmanship of the kind. *Diploma.*

470. Holmes & Blanchard, *Boston.* Two Grinding Mills. Very good mills, and well made. *Diploma.*

517. Darling & Schwartz, *Bangor.* Machinists' Tools. Fully equal to those exhibited by them at the last Exhibition, for which was awarded at that time a Silver Medal. *Diploma.*

637. J. A. Merriam, *Chicago.* Bolt-Cutter. A well got up machine, the dies pressed down into place by means of a lever and inclines. After the bolt is cut, the dies are drawn back by the movement of the lever, and the bolt withdrawn by hand. *Silver Medal.*

683. L. Wright, *Newark, N. J.* Pendulum Scroll Saw. The pendulum, placed below the table, is moved by the feet of the operator. The saw is attached at the top to a spring pole, and the lower end to the segment or pendulum below by a strap. At each movement of the segment, two motions (an up and down motion) are produced; making a quick-moving saw, and very efficient for small work. *Silver Medal.*

684. Manhattan Arms Co., *Newark, N. J.* Case of Drills. Twist Drills for machinists' use. Very well finished, and to appearance excellent tools. *Bronze Medal.*

686. John Wooley & Son, *Boston.* Vise. Machinists' Bench Vise of the common kind; well made and finished. A good Vise.

67. E. S. Orne, *Charlestown.* Saw-Grinding Machine. Model of a Machine intended for grinding and polishing several saws at the same time.

70. H. F. Shaw, *West Roxbury.* New Mode of Transmitting Motion. Done by one crank-shaft at right angles above the other crank, connected by links and sliding-boxes.

826. T. M. Coffin, *Plymouth.* Piano-forte Manufacturing Drill Stock. Well made.

668. MOORE, WYMAN & CO., *Boston.* Upright Drill. A convenient, well arranged Upright Drill. Self-feeding, and of excellent workmanship. *Bronze Medal.*

773. JAS. ROBERTSON, *East Boston.* Improved Drug Press. Portable Screw Press for druggists' use, with a cylinder to contain the drugs, with wire gauze fitted into a tunnel shaped bottom, so arranged as to convey the liquid into a bottle. The screw has a piston attached to it, and is made tight with a rubber ring. *Diploma.*

112. WHEELER HORSESHOE CO., *Boston.* Model Machine for rolling Iron for Horseshoes. A pair of rolls made up of rings fitted to the shafts; the rings turned and cut to any desired pattern. The iron bar is passed through the rolls in the usual way, leaving the impression of the rolls on the iron, to be used for making the horseshoes. *Diploma.*

270. WHIPPLE FILE CO., WM. P. PIERCE, Agent, *Boston.* Four File-Cutting Machines. These are upright machines for cutting round, half-round, and flat files, which the Judges consider an improvement and better machinery than were those used by this Company at the last Exhibition. These machines do the work with great rapidity and precision, and will cut an excellent file. *Gold Medal.*

461. J. E. WARNER, *Boston.* Stave-Planing Machine, and Stave-Hewing Machine. The Hewing Machine is arranged on an iron frame with a horizontal shaft and disk fitted to one end, containing cutters. The rough piece of wood to make the stave from is moved by hand past the face of this disk and cutters.

The Planing Machine is also arranged on an iron frame, with one cutter shaft horizontal on the under side of the stave, arranged at right angles with the stave, and has concave cutters to plane the outside circle of the stave. The inside of the stave is planed cross-ways by cutters revolving with an inclined upright shaft. The incline of the shaft can be changed, so as to plane the staves for a large or small barrel. *Bronze Medal.*

647. AMERICAN TOOL AND MACHINE CO., *Boston.* Lathes, Chucks, Slide Rests, Pulleys, Hangers for Shafts. Superior Lathes for brass finishers' use. Four jawed chucks of the usual arrangement, for machinists' use; very well made. Hangers and boxes, self-lubricating and self-adjusting; a very good arrangement. *Silver Medal.*

710. MORSE TWIST DRILL AND MACHINE CO., *New Bedford.* Case of Twist Drills. Valuable tools for machinists' use. These Drills are made with a gain twist. The two cutting edges are parallel, and remain parallel as the Drill wears up. *Silver Medal.*

491. **South Boston Iron Co.**, *Boston.* Gear Pattern. Very well made; the teeth cut by machinery. Cutting the teeth of a wooden gear pattern so large in diameter as this is something new.

Diploma.

65. **Thomas R. Shedd**, *Billerica Centre.* Self-regulating Boring Machine Attachment. This is a common hand-boring machine for boring wood, arranged with an adjustable gauge, and bell attachment to notify the operator when the auger has reached the intended depth. The gear for drawing the augur shifts itself into the rack by a backward movement of the cranks, and then by a forward movement the auger is lifted, and the gear unshipped ready for another operation.

Bronze Medal.

228. **From New York Belting and Packing Co.**, by **E. Stone Goodwin**, Agent, *Boston.* Emery Wheels and Sticks. What is known as the Solid Vulcanite Emery Wheels and Sticks. Very good articles.

Diploma.

306. **A. J. Roberts**, *Boston.* Two models Street-Sweeping Machine. One of the models is arranged with a rotating brush, made to work in the gutter, near the curbstone; connected to this, by a universal coupling, is another rotating brush, at an angle to the one parallel to the curbstone, and extending into the street. These brushes or sweepers are attached to a carriage, and made to revolve as the carriage is drawn along, and intended to sweep the dirt from the gutter into the street.

The other model is mounted on wheels and is intended to be used as a wagon to receive and carry away the dirt, which is taken up by brushes attached to the back part of the wagon, and arranged so as to brush the dirt on to an endless belt or inclined elevator, which deposits the street sweepings in the wagon. These brushes and elevator are driven by the forward movement of the wagon, and are so made as to be easily detached from one wagon and attached to another. One sweeper can be attached and used on any number of wagons.

The Judges could not learn that these Machines had been put into practical use. *Diploma.*

378. **American Nail Machine Co.**, *Fairhaven.* Nail Machine and Grinder. The Grinder is arranged with the Vulcanite Rubber Emery Wheels; the knife is fastened to a sliding carriage, and is set up by a screw to the cutting edge of the wheel, moved forward and back by hand.

The Nail-Cutting Machine has an automatic, self-feeding attachment, cuts the nails without turning the nail-plate, and has a header on each side of the machine. One man or boy can keep several of these machines in operation at the same time. *Silver Medal.*

409. F. K. Sibley & Co., *Auburndale.* Emery and Crocus Cloth. Excellent samples; probably equal to those in the last Exhibition. *Diploma.*

411. Wm. Mason, *Providence, R. I.* Friction Pulley. Shafting Pulley, with segment brakes applied to the inside of the pulley rim, set out by means of toggles; operated by the shipper handle. *Diploma.*

421. Union Pin Manufacturing Co., *Boston.* Pin-Making Machine and sample of Pins. This is automatic in its operations, taking the brass wire at one end of the Machine from a coil, and delivering the pins, finished, in a pan at the other. There is a small hammer which makes two indentations on the pins, near the point, to prevent the pin from working its way out of the cloth. The Pins made by this machine are excellent, and equal to any imported. *Silver Medal.*

89. J. J. Walworth & Co., *Boston.* Self-Feeding Ratchet and Ratchets without Self-Feed. This Self-Feeding Ratchet is known as Chapman's patent; it has a positive pawl and ratchet feed.

Ratchets without self-feed, similar to the drilling ratchets in common use. Well made. *Diploma.*

152. Russel's Vise and Wrench. An adjustable Wrench, which may be used as a Vise when attached to the work-bench.

151. Boston Milling and Manufacturing Co., *Boston.* Crusher and Pulverizer. The Crusher is a substantial, and to appearance, a durable machine. It consists of a stationary perforated cylinder. The bottom (a hard iron plate,) is provided with hammers firmly attached to the plate. This part is made to revolve with an upright shaft. Any splint substance, like coal, quartz or bones, is thrown through an aperture in the cover, drops on the rapidly revolving bottom, and, coming in contact with the hammers, the material is broken into small pieces. When broken small enough, they pass, by centrifugal force, through the holes in the sides of the stationery cylinder, and are deposited in a tight enclosure below. From thence the material is conveyed to the fine pulverizer, which consists of a rapidly revolving horizontal shaft with arms, provided with hard cast-iron blocks. The rapid revolutions of these blocks, combined with the action of the air admitted into the casing of this machine, pulverizes the materials. As the particles are pulverized to the required fineness, they are conveyed from this machine by a current of air produced by a fan-blower. The fineness of the pulverized material may be regulated by the quantity of air passed through the blower; the smaller the amount of air the finer the pulverizing. The

action of the blower drives the pulverized material into a dust-tight chamber, the dust is allowed to deposit itself, and the air conveyed to the pulverizer again ; the same air is constantly used, consequently there is no waste.

A very efficient Pulverizer. Does a large amount of work, and, to appearance, does it well. *Gold Medal.*

211. James L. Johnson, *Ashburnham.* Model of Engine Lathe. The peculiarity of this is in the manner of using the template for guiding the turning tool. The template consists of a piece of thin iron or brass, made to slide in the tool carriage, below the tool post; it allows the tool post, with the upper part of the carriage, to move freely, and the tool is firmly guided by the template. The template can be easily changed for another. A template for the purpose is used for moving the turning tool to or from the work when cutting screws. We have no evidence of any large work being done by this arrangement. We see no reason why it would not be efficient. *Bronze Medal.*

530. American Barrel Machine Co. One Shaper. Two Jointers for Barrel Staves. The staves, after they have been planed, are put into a hot-air box; from thence they are passed through the Shaper. This machine is arranged with a series of concave and convex rolls arranged on a curve, which gives the required curve to the staves while hot.

The Jointer is arranged on a substantial iron frame, and consists of a face-plate with four planer irons. The stave is clamped in an upright swinging frame, made to radiate from the face plate. The stave is pressed against the face-plate and cutters; one edge is jointed. The frame containing the stave is then swung around, and coming in contact with saws and cutters, the stave is cut the required length, chamfered and grooved to receive the heads. The stave is then carried to the face plate and cutters on the opposite side of the machine, which finishes the stave ready for use, without removing it from the swinging frame. This machine performs its work rapidly and well. *Gold Medal.*

449. Union Vise Co., *Boston.* Brainard's Parallel Traversing Vise. This Vise is a machinist's bench Vise, and is sometimes used to hold work to be planed or drilled. A very good and useful tool. *Diploma.*

186. G. W. & F. Smith, *Boston.* Centre Punch. This is a small machine to be applied to the end of a bar of iron, or shaft, to be centred. It consists of four curved guides or points to be applied to the outside of the bar; a cone is moved on the central spindle, and is so arranged as to control the position of the Centre Punch, which is fitted to and slides in the centre of the spindle. *Diploma.*

895. FLANGING ON BAY STATE IRON. Probably done to show the quality of the iron.

554. A. N. CLARK & Co. Leather Belting. The flat belts used on the engine, and driving the machinery, were of excellent quality. The round belts, made by Miller and Andrews, are peculiar in construction, very firm and well made. *Diploma.*

885. C. L. GODDARD, *New York.* Burring Machine. Steel Ring and Solid Packing. Evidently an improvement on the usual way of making the burring rolls. *Diploma.*

931. J. F. PAUL. Improved Wood-Turning Lathe. A very ingenious arrangement for variety wood-turning. *Silver Medal.*

SEWING MACHINES, COTTON AND WOOL MACHINERY, KNITTING MACHINES, AND SHOE MACHINES.

J. C. HOADLEY, L. A. CUTLER,
Sub-Committee.

SEWING MACHINES.

The Special Committee to whom was referred this particular branch of mechanism, are amazed at the march of improvements which is manifested from year to year, when we cast our eyes back but for a few years, and remember that the first complete Sewing Machine designed for general purposes was patented September 10, 1846, by Elias Howe, Jr., of Cambridge, Mass. To give a description of this machine would take too much time and space. As the original machine is now on exhibition it is unnecessary.

Over two hundred different patents have been granted on Sewing Machines, but of these a very small proportion have been brought into use. At the present time it would seem as though the Sewing Machine, in its various forms, had arrived at very near perfection. Although it is but a few years since the first machine was brought into general use, the introduction is materially felt by a great number of branches of manufacturing and commercial industry. Almost every department of the clothing and shoe manufacture has been entirely revolutionized by it, and instead of its taking employment from the sewing woman, it has increased the demand for her services.

The use of the Sewing Machine has, within a few years, been made a part of the education of young ladies in school. In the New Jersey State Normal School it is required of each member of the graduating class to devote one hour each day practising with it, under the guidance of a teacher.

New Jersey is not alone. New York and other States follow in her course. Though scarcely fifteen years have passed since Sewing Machines first began to attract public attention, the demand for them has become so great that the largest class of factories has been built up for their exclusive manufacture. The capital alone invested in this country in this business is supposed to amount to five millions of dollars, and about forty or fifty thousand machines are manufactured annually.

These machines are made by the use of the most improved machinery, duplicating all its parts. So far, it appears that the same work cannot yet be produced in Europe at so low a price. And thus a new item is added to our foreign exports, which has already attained considerable magnitude for so new an article, the number of machines sent abroad being not less than fifteen or sixteen thousand per annum.

The several machines now on exhibition have all of them their excellent qualities, and it is a difficult matter for the Judges to select the best machine; and if they should seem by some to fail to point out and notice the various qualities of the different machines, it will be because they are so numerous that it is impossible for them to do it; it would take weeks of time and quires of paper, and we trust a passing remark will be sufficient.

289. Leavitt Sewing Machine Co. Five Sewing Machines similar to those on exhibition in 1860. These machines are calculated for family use, and also for manufacturing purposes. They are a shuttle machine, and are well adapted for the finest of muslin or the heaviest of leather. Since 1860, quite a number of improvements have been adopted by this enterprising Company, such as the governing the tension, improvements in feed adapting it to all kinds of fancy stitching, and a neat device for guarding the shuttle movement, so that the thread cannot get misplaced during the most rapid operation. These machines need no praise from the Committee, for you will find them in most all the manufactories in the country. The facility with which they bind shoes and boots, and stitch fine leather for harness and carriage work, make them indispensable to the manufacturing interest. This machine received a Silver Medal at the Fair of 1856, and a favorable notice, and with the many improvements made since that time it sustains a high reputation.
Silver Medal.

483. Three Sewing Machines. John G. Folsom, *Winchendon, Mass.*, contributed two kinds of Single Thread Sewing Machines—the Globe and New England. These machines make the same stitch as the Wilcox & Gibbs Machine. The Globe Machine is equal to any single-thread machine, and is capable of doing all the different kinds of family sewing. It is capable of being operated by hand, or other power; it is

an easy, rapid and sure operator. Their machines are offered to the public at a much reduced price from any other machine now before the Committee, putting them within the reach of almost any family.

This, together with its combination of parts, its beauty and simplicity, we recommend a *Silver Medal.*

159. SEWING MACHINE IN BOX. These machines are a Shuttle Machine, three in number, contributed by Plummer & Wilder. They are three different sizes, designated by A, B and C—the A machine being the smallest and calculated for family use, B and C being for different range of manufacturing purposes, and larger in size. These machines have one peculiarity which presents itself with force; all the movements are what is termed positive in their operations. These machines are the oldest before the public, but in the last year or two great improvements have been made, and they are now one of the best, if not the best and most reliable machines in use. They accomplish a great range of work, and are simple in their construction. They have in former years received the highest premiums from this Association, and with their late improvements are worthy of high commendation.

Silver Medal.

361. TWO SELF-SEWING MACHINES. Barnum's Self-Sewer. This is a simple, at the same time a very effective device to guide the work upon a Sewing Machine, and is capable of being attached to all the different kinds. It is perfectly reliable, and will recommend itself to every household that uses a Sewing Machine. *Bronze Medal.*

430. FLORENCE SEWING MACHINE. This Machine is like most others, embracing the combination of various patents, for which it pays tribute, but it has a number of patents which are peculiar to this Machine. It is a shuttle machine, well adapted to a large range of work, and can be easily understood. It is capable of making four distinct stitches. The changes from one stitch to another are so arranged that they are made with ease and precision.

There is another feature which, to the Committee, is very good. The tension of the thread in the shuttle is a very simple device, at the same time perfect in its operation. The Machine is simple in its construction, and does not appear to be liable to get out of order. *Silver Medal.*

184. PARKER SEWING MACHINE. The Parker Sewing Machine makes the double lock stitch, laying the ridge upon the back smooth and flat. It has long been before the public, and its large range of work makes it a great favorite among the ladies. These Machines were on exhibition at the Fair of 1860, and the Judges at that time bestowed upon them a favorable notice and awarded a Silver Medal. Since that, a number of radical improvements have been made, making them much more

simple, and, if possible, less liable to get out of repair. They are very perfect in their mechanism, and, in case of accident, can be repaired easily, which is a very essential point in a good machine.

Silver Medal.

824. A. F. JOHNSON'S SEWING MACHINE. This is one of the Machines which was on exhibition by Mr. Johnson at the Fair in 1860, and for which a Gold Medal was awarded. It sustains a good reputation. *Diploma.*

360. WILCOX & GIBBS' SEWING MACHINE. Five Sewing Machines. This Machine was exhibited at the ninth Exhibition. It is a one-thread machine, making the lock stitch. At that time a Silver Medal was awarded and a favorable notice made. These Machines have a world-wide reputation, and with the many valuable improvements which are constantly being made, it will, no doubt, continue to take its high position among this class of machines before the public. *Diploma.*

330. MISS JANE GREY. Embroidery Sewing Machines. Under this number, Miss Jane Grey exhibits samples of embroidery as done on a Sewing Machine making the Grover & Baker stitch. There is some novelty in the Machine which, exclusive of its attachment for fancy work, makes it a reliable Family Sewing Machine, but with these attachments, which in their mechanism are very simple, this Machine is a splendid success; the change from any kind of work to another is but the work of a moment.

The samples of work done on this Machine in the way of embroidery merit especial notice of the Committee; its great variety, together with the beauty of workmanship and tasteful designs, are deserving high encomiums. *Silver Medal.*

864. GEORGE F. CLEMENS, *Springfield, Mass.* Cloth Guide for Sewing Machines. This is a very ingenious apparatus to attach to a Sewing Machine to guide the work.

It is well adapted to the purpose intended, and no doubt will secure a share of public patronage. *Diploma.*

428. CONTRIBUTED BY THE LAMB KNITTING MACHINE COMPANY, *Springfield, Mass.* Family Knitting Machine. This comes nearer a Family Machine than any other machine known by the Committee. It will widen and narrow at the pleasure of the operator; it makes a great variety of stitches, adapting it to a great variety of work; it is easy to understand, and not liable to get out of repair. A pair of stockings, either plain or seamed, can be knit on one of these Machines in fifteen minutes, and it is only the work of a moment to change from one pair to another. It is very compact, so arranged that it can be attached to a

common table, and easily removed when not in use. It is a very ingenious invention, and is entitled to a *Gold Medal.*

404. CIRCULAR RIB KNITTING MACHINE. These Machines are neat in appearance, simple in construction, and perfect in their operation, requiring but little attention, and work very rapidly, with little liability of breaking needles, which, if broken, are easily replaced, as they require no fastening in the Machine, each needle being independent in its movements. *Silver Medal.*

317. CONTRIBUTED BY THE HADLEY COMPANY. Thread Winding Machine. It is well adapted for the purpose for which it is intended, and a good specimen of workmanship. *Diploma.*

557. CONTRIBUTED BY THE UNION BUTTON-HOLE MACHINE CO., *of Boston.* Three Button-Hole Machines. For some years past, great efforts have been put forth to accomplish the object of working a button-hole, and cording it at the same time, by machinery of a simple construction, not liable to get out of repair, and easy to be understood. These Machines cover all these points, and, further, they do the work and make the same stitch as is done by hand. These Machines are not calculated for any other kind of work, but they do this very rapidly and beautifully. They work a button-hole complete in thirty seconds, without any extra effort. They are a new invention. For their adaptation for the purpose for which they are designed, and their thorough workmanship, they are deserving the highest commendation. *Gold Medal.*

861. CONTRIBUTED BY GEO. D. CLARK, *Boston.* Patent Bobbin Holder. This is a very simple and sure device to secure the Bobbin to the Spindle while in use. It is worth the notice of manufacturers. *Diploma.*

459. RIBBON LOOM. This is booked as Knowles & Brothers' Ribbon Loom, but it seems to the Committee that this does not cover the whole ground sought after by the inventor, the object of which is to produce a Loom capable of working the harnesses to the fullest extent of any combinations by a positive motion, without the possibility of a mistake. This Loom is on an entirely new plan, discarding the usual plan of reciprocating lifters and depressers, and adopting instead a positive rotary motion. The cords that hang the harnesses are attached each to a rotary disk and receive their motion from it, thereby having an easy motion on the warp.

The inventor gains advantage by this device. He is enabled to start the rising and descending harness at the same time, causing them to pass each other on the centre without any interruption, thus enabling the Loom to run a much greater speed, at the same time have an easy pressure on the yarn, and also gives ample time to pass the shuttle when the harness is fully open and at rest. What is claimed and new on this Loom is—

First. The independent crank disk to move the harnesses, which start imperceptibly, pass the centre very rapidly, and come to rest, as at the start, easily and without strain.

Second. Starting these crank disks in either direction at one and the same time, under the control of the pattern chain.

Third. Producing a rest to the harness, either up or down, during the passage of the shuttle.

Fourth. Moving the shuttle by means of a constantly rotating lever, for the purpose of producing a perfect selvage on the goods.

Fifth. Improved let-off motion for the warp, to provide equal tension at all times.

The improvements in this Loom have been well tested, and they are very valuable to the manufacturing interest.

It is perfectly new, and deserves the highest commendation.

Gold Medal.

569. MANUFACTURED AND CONTRIBUTED BY DAVIS & FURBER, *North Andover, Mass.* Finisher Wool Card, with a Nine Roll Condenser attached. Also, a Machine for setting teeth in Card Clothing.

Too much praise cannot be bestowed upon the designs and workmanship of these machines.

The Carding Machine is an improved pattern, calculated to do the finest work. For the beautiful finish, judicious and elegant proportion in all its parts, the Committee recommend them to the favorable notice of manufacturers, and award a *Silver Medal.*

The Machine for setting Card Teeth is a beautiful production, and has many improvements from any other now in use. Former machines for the same purpose have been very complicated. It has been the aim of the builders of this to reduce its parts and simplify its movements. This they have accomplished in a great degree. This Machine, in all its details, is strong and durable, and so arranged as to be easily got at to adjust or clean. Most of the movements are positive in their action, therefore doing perfect work.

The stop-motion seems to be a thing of intelligence; if anything is not in perfect order, and the work is not being done as it should be, the machine stops to be adjusted; the least bend in the wire will do this. In fact, the whole Machine is the result of long study and close application.

For its many valuable improvements, its beautiful arrangements in all its parts, and its splendid workmanship, we would recommend a

Gold Medal.

26. CONTRIBUTED BY JORDAN, MARSH & CO., *Boston*. First and Second Breaker on Woollen Machinery. Model First and Second Breaker on Woollen Machinery. Model Finisher on Woollen Machinery. Model Spinning Jack. This is a fine set of Woollen Machinery, all in successful operation on a small scale, showing to many who never saw it before the mode of operating a woollen manufacturing carding-room. To some it is a great curiosity. For the display we would recommend a *Diploma.*

103. J. E. CROWELL, Contributor, *Chelsea.* Flax Break and Stitching Machine. This Machine has some advantages over any other, inasmuch as it breaks the flax and stretches it at the same time. It is constructed of a series of cast-iron rollers, fluted from end to end, running in pairs geared together. There are seven pair of these rollers through which the flax passes, breaking the straw and preparing it to be stretched. After leaving these rollers it passes between two made of wrought iron, with steel blades; these are so arranged that they run much faster than the other rollers, and they stretch the shearers out after it is broken up by the first seven pair. After passing the stretching rollers, there is one pair of fine fluted rollers which takes the flax and delivers it straight and nearly clean, and it requires very little hand work to complete the process, and there is no loss of fibre. There is a second part to this Machine for cleaning and scraping mowed and tangled straw, which is very useful in some parts of the country. These machines are well made and have the appearance of durability. They are a modern improvement and are a great labor-saving machine. *Silver Medal.*

132. BLAKE'S BELT STUD. There is a metallic Stud for fastening together the ends of belts, instead of using leather lacing. This is a very good substitute, and takes the lead in metallic fastenings for belts. *Bronze Medal.*

231. CARD GEAR AND COG WHEEL. Patent improved Gear and Cog Wheel. Calculating Rule. A set of Cut Gears, which are a specimen of good workmanship. The contributor, Mr. C. B. Long, has also contributed, under this number, a Calculating Wheel for the size of a Gear to any number of teeth to the inch desirable. This rule to the machinist is what a common box-rule is to a carpenter. It is well got up and is perfectly correct in calculation. This rule is so well adapted for the purpose intended that it is entitled to a favorable notice. *Silver Medal.*

122. CONTRIBUTED BY E. D. & G. DRAPER, *Hopedale, Milford, Mass.* Patent Oilers. Dutcher's Patent Temples. Stearns' Patent Shuttle Guide.

The Oiler is a neat little oil-can, with an arrangement for catching any oil which may run down on the outside. It is, therefore, conducive to neatness and economy.

Dutcher's Patent Temples are in extensive use. They are well and faithfully made by the Messrs. Draper.

As no explanation was made of the peculiarity of Stearns' Patent Shuttle Guide to the Committee, we are unable to report upon its merits.

Bronze Medal.

156. CONTRIBUTED BY PETER B. PAGE, *Haydensville, Mass.* Machine for drawing together large Belts for Lacing. This is a very simple arrangement of clamps, pulleys, gears, &c., for securing the ends of large belts and drawing them together. For lacing it is a very compact and useful apparatus, and well worthy the notice of those having in charge large belts. *Bronze Medal.*

785. E. OSGOOD'S ELASTIC ROLLER COTTON GIN. This Gin is intended for long or short staple cotton. It has only one roller, which is elastic, being made of steel covered with rubber. This roller revolves in a steel concave plate. The seeds are removed by a clearer with saw-shaped teeth. It is claimed that it will clean five times the cotton in the same time as the ordinary roller gin, and without injury to the most delicate fibre. This is a new invention, nôt yet in general use, but in the opinion of the Committee promises to be a very valuable machine, and they award it a *Silver Medal.*

80. F. H. MOORE. Cloth and Leather Cutting Machine. A Machine well adapted to cutting out, by marks or patterns, several thicknesses of cloth or leather piled upon one another, and likely to be useful in establishments for manufacturing ready-made clothing.

Bronze Medal.

827. WHITAKER'S PATENT CORRUGATED IRON SOAP FRAME OR MOULDS. Corrugated Iron Soap Frames. This is a very useful article for soap manufacturers. It is made in two parts, or sections, whose edges are flanged and fitted with pins and keys to allow of being taken apart for the removal of the soap when cold, the top and bottom are left open, the bottom being fitted for attaching to a bottom board, or other base, when in use.

The Frames are constructed of common sheet-iron, of sufficient thickness and of such size and shapes as required. The sides are stiffened and made rigid by corrugated sheet-iron rivetted to their other surface, and running lengthwise of the frames. It has a number of advantages over others heretofore used, inasmuch as it is much lighter, it has extraordinary strength, and the soap cools with greater rapidity. For this, together with many other advantages which the Committee do not feel that it is necessary to mention, they would recommend it to all those interested. *Bronze Medal.*

756. OLIVER PEARL, *Lawrence.* Pearl's Oval, Flat Swedged, Throttle Spinning Flier and Whorl. This Flier differs from that commonly in use, in being made of oval instead of round wire. The edge of the oval is in the direction of the motion, and offers less resistance to the atmosphere than a round wire of equal weight. The oval form is produced by swedging, which stiffens the wire materially. The advantages claimed are, that it requires less power to drive it at the same speed than the common Flier, experiments having shown a saving of about 22 per cent. Also, that the improved Flier and Whorl weigh about 24 per cent. less than the ordinary Flier and Whorl. Also, that the bobbin running with the improved Flier holds about 22 per cent. more yarn than that running with the common Flier, occupying the same space in the frame. The Committee, from the evidence before them, cannot fully endorse these claims. The Flier is a very essential part of spinning machinery, and any material improvement in it is very important to the cotton manufacturer. Mr. Pearl's Flier seems to be a substantial improvement and to be rapidly making its way into general use. The Committee award it a *Bronze Medal.*

918. JAMES S. PEATFIELD'S PATENT, *Ipswich, Mass.* Knit Rubber Belt. This Belting is made on a knit foundation, which gives it a slight elasticity. It is claimed that it runs much lighter than common rubber belt made on canvas foundation. The cost is about the same. It is a good specimen of Rubber Belting, and is worthy the notice of those using Belting. *Diploma.*

RIDGWAY'S BATTERY. This invention is deemed to be of sufficient importance to call for particular and extended notice.

Recent experience has taught us that no inventions are more important than those relating to the art of war. To the original "Monitor," we owe our deliverance from the danger of a crushing disaster, which might have reversed the issue of the war, and darkened the course of history. The service rendered by subsequent vessels of her class, though not so striking, were of incalculable value. To the efficiency of our repeating arms do we owe many a victory. It is not too much to say, that the ingenuity and skill of our mechanics have proved as important and necessary as the courage and devotion of our soldiers, to the salvation of our country.

In the event of a foreign war, the same would hold good in perhaps a greater degree. Fought, as such a war must be, chiefly upon the ocean, that nation which should have at command the best results of mechanical science and skill, would certainly come out best from the encounter.

Those ships which unite in the highest degree the qualities of invulnerability, speed, manageability, with weight and velocity of projectile, safety and accuracy of gun and convenience of manipulation under all circumstances, will give the nation which is wise enough to invent and fortunate enough to possess them, victory, security and glory in future maritime wars.

It is to the last mentioned of the above qualities that the invention of Mr. Ridgway relates. Although last mentioned, it is not only of the highest importance, but really among the first things in the order of time, to be determined, since upon the manner of mounting and manipulating its guns, will the whole structure of the ship in a great measure depend.

Mr. Ridgway proposes to mount the guns in a vertical wheel, revolving on a horizontal axis, which axis is supported by a horizontal table, to which a horizontal rotatory motion is imparted, so that the gun may be freely moved in all directions.

Two guns are placed on opposite sides of the wheel, so as to counterbalance each other, and to admit of alternate firing, whereby they may be kept from too rapid heating. The axis of each gun being upon a chord of an arc of the central periphery of the wheel, the axis of the wheel is placed at such distance below the deck as to bring the gun at a suitable height above the deck to admit of any required depression of aim.

When, therefore, one gun is in position for firing, or "in battery," the other gun must be quite low down in the hold, as the bottom of the wheel is placed near the top of the kelson, and as the axis of the wheel is below the deck, and probably in all cases below the surface of the water, great stability must result. The periphery of the wheel is formed into the zone of a sphere of radius equal to its own central radius, and that portion of this zone projecting above the deck is supplemental on each side by the segment of a sphere of corresponding radius, so that the whole arrangement, as seen above the deck, presents the appearance of a spherical dome of small elevation. This entire dome has the horizontal rotatory movement before spoken of, and its central zone, which is the segment of the wheel for the time uppermost, has also a free rotatory movement in a vertical plane, on the horizontal axis of the wheel. All these movements are secured by mechanism of the simplest kind, and the movements themselves, being merely rotatory, are the simplest and least liable to derangement of any known to mechanics.

All parts being perfectly balanced, the power required is merely that necessary to overcome the friction of well made and well oiled surfaces, so situated as to be perfectly protected from dirt or injury; and the power of steam is conveniently applied to effect all required movements.

The cleaning and loading of the gun are done when it is in its lower position, low down in the hold, where it is rendered perfectly secure by the water. The arrangements for loading, aiming and firing, seem to be simple and convenient; but these are susceptible of a great variety of modifications, should such be dictated by experience for the convenience of officers and men. No port-hole is required but the muzzle of the gun itself; and for this, no port-stopper is necessary; the recoil of the gun instantly elevates the muzzle out of the reach of hostile shot.

No costly and troublesome arrangement of springs is necessary to receive the recoil, since this is provided for in the simplest and most efficient manner, by the rotation of the wheel, which must be favorable to the durability and safety of the gun.

No smoke is admitted to the casemate, save that from the vent. Only an officer, or at most an officer and one man, can be required in the upper portion of the turret, where the gun is trained, sighted and fired; the rest being in the lower portion, away from noise and smoke, and perfectly protected by the water.

There is no limit to the elevation of the gun, from any suitable depression below the horizontal to the zenith. Every gun, therefore, may be used as a mortar, for vertical fire.

It is obvious that this arrangement admits of the smallest exposed area of turret, or casemate; much smaller than the Ericsson turret, and that greater thickness of armature at this point is, therefore, attainable with a given weight. At the same time, the spherical form is in itself the strongest possible, against blows from without, so that equal thickness would give greater security than in the cylindrical turret.

If it be objected that the lobes each side of the wheel are liable to displacement, so as to be in danger of binding against the wheel, interfering with its free rotation, this danger may be entirely removed by various simple devices. An effective method would be, to place the pilot-house on the top of the dome, thus strongly uniting the lobes at their summit. This would be attended by the loss of the power to elevate the gun above 45 degrees perhaps, and other methods might be preferable. A suitable chamfer on the angles of the wheel and lobes, would perfectly guarantee the joint against injuries that cause the wheel to bind so as to prevent its free revolution. Provision is also contemplated to be made to remove the lobes to a slightly increased distance from the wheel, so as to relieve the latter, if obstructed by any cause, at the joint between it and the lobes of the turret. This may be done even during action.

It may be thought presumptuous, by the brave, experienced and accomplished officers of our navy, on the part of mechanics and artisans unskilled in the art of war, if they express too confidently their opinions upon untried devices in the application of mechanical science to warlike purposes. But the adaptation of means to ends, is in this case so perfect, the means themselves are so simple and efficient, and the ends are so important that we cannot refrain from uging this invention most earnestly upon the attention of our government. The strong and hearty approval which it has received from our ablest and most experienced naval officers, fully sustains our opinion of its merits.

Skilfully carried out in all its details, mounted in such a hull as our shipwrights can build, propelled by such engines as our machine-shops can turn out, provided with the guns which experience has shown to be most efficient, or with those better guns which improved methods of working steel will certainly give us, commanded by such men as Farragut and Winslow, and Porter, and manned by such tars as those who fought their way past Forts Jackson and St. Philip, and into the Bay of Mobile, this Ridgway Battery would, in the opinion of this Committee, give us signal advantages over all the navies of the world. We award to John Ridgway, of Boston for his revolving gun Battery, the highest testimonial we can bestow—a *Gold Medal.*

BUILDING MATERIALS AND HARDWARE.

JUDGES:

Nathaniel J. Bradlee, William G. Brooks,
Daniel Davies, J. Milton Roberts,
Henry A. Lyford.

The Committee appointed to inspect and judge on the articles submitted to them, under the head of Building Materials and Hardware, have attended to the duty assigned them, and respectfully report that they have carefully examined one hundred and thirty-seven articles, and regret that so few were worthy of notice, and they recommend the awards as per report annexed.

12. I. L. Denton, *Hyde Park.* Specimen of Horseshoes, well made.

22. Capron & Upham, *Pawtucket, R. I.* Model of Swinging Gate Hinge. Contributed by Horace M. Lee. Well adapted for the purpose. *Diploma.*

37. J. Britton, Jr., *Stoughton, Mass.* Samples of Awls; very fine. *Diploma.*

39. M. P. Hall, *Manchester, N. H.* Model of Lock Protector; neatly made.

40. Sigourney Wales, *Boston.* Patent Removable Window Sash and Weight Cord Holder. Very ingenious. *Diploma.*

41. Edward Bates, Jr., *Cambridgeport.* Plumbers' work.

LOCKS.

45. Charles Ledue, *Boston.* Secret Safe Lock.

48. William Hall, *Boston.* Locks in Case. This the Committee consider the best Index Lock on Exhibition. *Silver Medal.*

64. Denio & Roberts, *Boston.* Case of Bank Locks. All excellent Locks, and for the Yale Treasury Lock we award a *Silver Medal.*

189. Norwich Lock Company, *Norwich, Conn., by* Kerr & Brady. A very ingenious catch Lock. *Diploma.*

212. Henry Pickford, *Boston.* Case of Locks and Hinges. Very nicely finished. *Diploma.*

708. S. N. Long, *Chatham.* Two Locks, Extension Key and Combination of Bolts. A very curious arrangement.

BRIDGE MODELS.

72. Mosely Iron Building Works, *Boston.* Model of a Bridge.

62. John Boles, *Boston.* Truss for Bridges and Roof. An excellent arrangement for a Truss. *Silver Medal.*

1,662. William Batchelder, *Newburyport, Mass.* Model of a Bridge. Done by a sick boy. *Diploma.*

SKATES.

324. S. C. & S. Winslow, *Worcester, by* M. L. Bradford & Co., *Boston.* Case of Skates.

436. Smith Brothers, *Boston.* Case of Skates. Very superior in finish. *Diploma.*

495. H. R. & J. L. Plimpton, *Boston.* Floor and Ice Skate combined.

724. D. H. Shirley, *Boston.* Patent Skates. These were very nicely finished, and for the method of fastening we award a *Diploma.*

874. Jasper P. Moore, *Boston.* Skate Clog. Very good idea.

SPECIMENS OF SLATE.

There were seven contributors of this article, and they were all of such superior quality that it was difficult for the Committee to decide, but on the second examination they decided in favor of No. 727.

110. Manhattan Slate Company. Red Stone Tile and Roofing Slate.

262. N. E. Slate and Tile Company. Slate and Tile.

277. Empire Slate Company, *by* A. H. Safford, *Boston.* Slate.

397. Scotch Hill Slate Company, *by* William Carpenter, Agent, *Boston.* Slates and Slabs. *Diploma.*

576. Green Mountain Slate and Tile Company, *by* Dickerman, Thaxter & Wilson, *Boston.* Sample of Slate. One Table Top.

642. A. Wilbor & Co., *Boston.* Brownville Roofing Slate.

727. Governor Paine Slate Company, *Northfield, Vt., by* George F. Sargent, Treasurer, *Boston.* *Diploma.*

SCALES.

102. Howe Scale Company, *by* George B. Reynolds, Agent. *Boston.* These Scales received a Gold Medal at the last Exhibition, since which time this Company has invented some new Scales, such as the Furnace Charging Scale, which is very ingeniously arranged, so as to enable the overseer to arrange the weights, and not trust to his men; the Flour Packing Scale, arranged expressly for that business; the Pork Scale, and the Army Scale, this last being an essentially *portable* Scale; when open it is ready for weighing, and when closed ready for transportation. For these improvements we recommend a *Silver Medal.*

774. O. P. Drake & Co., *Boston.* Chemists' Balances. Very finely finished.

893. Howe & Bouvier, *New York.* Gold, Prescription and Counter Scales. Weigh Beams and Frames.

MISCELLANEOUS ARTICLES.

909. John C. Blasdel, *Boston.* Car Window Catch. A very nice arrangement. *Diploma.*

285. George Upton, *Boston.* Glue. Best on exhibition. *Diploma.*

72. Mosely Iron Building Company. Iron Shutters and Doors. An excellent article. *Diploma.*

108. West Castleton R. R. and Steel Company, *by* Charles F. Rand & Co., Agents, *Boston.* Equal to former Exhibition, at which they have received a premium.

641. Penrhyn Marble Co., *by* Joseph Story, Agent, *Boston.* Enamelled Slab. Beautiful specimens. Equal to those exhibited at a former Fair, at which they received a Silver Medal.

126. Asa D. Morse, *Boston.* Scagleola Pedestals. Very fine specimen. *Diploma.*

198. Oliver Ames & Sons, *North Easton, Mass.* Case of Shovels and Spades. Well known article.

147. Welch & Griffiths, *Boston.* Cast Steel Saws. Very fine.

247. S. S. Putnam & Co., *Neponset.* Forged Horse Nails. A very superior article. *Diploma.*

253. Benjamin Hadley, *Somerville, Mass.* Face Brick. Very handsome. *Diploma.*

270. Whipple File Company, *by* W. P. Pierce, Agent. Case of Axes and Hatchets.

291. N. E. Pump Manufacturing Co., *by* C. F. Mudge, *Boston.* House Pump. A valuable invention. *Silver Medal.*

295. A. W. Mitchell, *Boston.* Case and Frame Stencil Work. Very fine. *Diploma.*

311. W. H. Maine, *Boston.* Soapstone Work, Stone Sinks, &c. Superior work. Equal in every respect to his work exhibited at a former Fair, at which he received a Silver Medal.

327. Henry F. Glover, *West Dedham.* Case Moulders' Tools. Very good. *Diploma.*

336. Leonard Bailey, *Boston.* Mechanics' Tools. Very good. Received a Diploma at last Exhibition.

365. W. T. Vose, *Boston.* Case of Hydropults. Very superior article. *Diploma.*

365. W. P. Clark. Case of Faucets. A good article. *Diploma.*

383. N. Jenkins, *Boston.* Faucets. An excellent article. *Bronze Medal.*

398. William Mills, *Boston.* Specimen of Plumbing. Very fine. For the D. Trap and Solid Pipe we award a *Diploma.*

406. W. H. J. Pearson, *Boston.* Metallic Weather Strips. An excellent article. *Diploma.*

392. John G. Perry, *Kingston, R. I.* Patent Knife. Curious arrangement to avoid the spring. *Diploma.*

414. A. Field & Son, *Taunton, Mass.* Case containing 302 kinds of Tacks, Brads and Shoe Nails. An excellent article, for which they received a premium at a former Exhibition.

427. New England Felt Roofing Co. Warren's Roofing. Very good article. Received a premium at a former Exhibition.

432. Rogers & Sheldon, *Boston.* Clinch Nails. Very good.

449. Union Vise Company, *Boston.* Vises. *Diploma.*

457. Boston Fire Brick and Clay Retort Manufacturing Co., *by* James Edmond & Co., Agents. A very superior article. *Silver Medal.*

477. O. R. Chaplin, *Salem.* Centring Try-Square Bevel. A very useful article. *Diploma.*

481. Kingman's Roofing, *by* B. D. Washburn, *Boston.* Patent Roofing. An excellent article for repairing leaky roofs. *Diploma.*

552. Chester Mitchell. Specimen of Granite Cutting. Very good. *Diploma.*

517. Darling & Schwartz, *Bangor, Maine.* Try-Squares and Scales. Very superior article. *Silver Medal.*

615. Munroe Brothers, *Fitchburg.* Patent Melting Ladles. A very nice article. *Diploma.*

621. E. Stern, *Boston.* Improved Sad-iron. *Diploma.*

628. William P. Christy, *St. Louis, Mo., by* Charles Stodder, *Boston.* Fire Clay. Very fine specimen.

674. Kimball & Talbot, *Worcester.* Self-Registering Calliper and Divider. New and useful article. *Diploma.*

682. G. E. Mitchell, *Lowell, Mass.* Lemon Squeezer, Beer Faucet, Ice Crusher, Saw Handle. All these inventions the Committee consider great improvements, and award a *Silver Medal.*

716. John M. Dearborn, *Boston.* Patent Scaffold. Received a premium at a former Exhibition.

764. L. P. Faught, *Foxborough.* Sample of Paint Brushes. Very fine. *Diploma.*

789. Charles Reed & Co., *Fitzwilliam, N. H.* Specimens of Granite. A good article.

797. Cyrus Warren, *Nashua, N. H.* Mitre Plane. Excellent and useful article, well made. *Bronze Medal.*

814. P. K. Knapp, *Worcester, Mass.* Patent Scissors Sharpener. Very good invention. *Diploma.*

842. Charles Loring, *South Braintree.* Water Stop Threshold. Very good arrangement.

883. Bath Iron Mining Co., *Anowsie, Maine.* Emery in its native state and powdered for use. This article looks well.

887. Potter & Abel, *Whitehall, N. Y.* Specimen of Hones and Polishing Powder. Very good. *Diploma.*

1674. Flint & Skillins, *Boston.* Portable House. A very useful and valuable invention. *Bronze Medal.*

STOVES, RANGES, FURNACES, &c.

JUDGES:

Frederick H. Stimpson,	Seth E. Brown,
Nathaniel Adams,	Lewis Rice.

Your Committee have examined, with much care, the articles submitted to them; and as no opportunity was, or could be, offered them of making an actual trial of the various Stoves, Ranges, and Furnaces, — without which it is difficult to form a correct judgment of the relative merits of each, — they can only give their opinion of the workmanship, notice any novelty in construction, and suggest the results which may be expected from such novelty.

In the Department of Stoves, particularly cooking-stoves, little can be said. Most of those exhibited resemble each other so nearly that it is impossible, without a long trial, to form a judgment of their relative value. The Committee can say to the contributors, "many" of you "have done well;" but they cannot say, of any one, "thou excellest them all." There are peculiarities, in some of the other stoves, which have been noted.

In the Department of Ranges and Furnaces there is more variety, and your Committee have endeavored to describe these varieties and to express, by their recommendation of awards, the opinion which, under the circumstances, they have been able to form.

434. Moses Pond & Co., *Boston.* Magic Cooking Range. A Double-Oven Range, with hot-air fixtures, well made and containing many improvements. Among the improvements, a movable mantel, so constructed as to be brought forward, at will, over the boilers and in connection with separate dust-flues, to cause the steam, odor and dust to pass into the chimney. A hot closet on each side of, and level with, the fire-place, and an arrangement for broiling over a charcoal fire in the range, are the most important. *Silver Medal.*

Magic Furnace for Brick. Do., Portable. Both these are similar in their construction to the McGreggor and Magee Furnaces, and are well made.

510. Magee Furnace Company, *Chelsea.* Two Cooking Ranges. Both very well made and highly finished. The larger one has an

arrangement by which three articles, two of them being kept turning by spring jacks, may be roasted at the same time before an *open fire.* The arrangement of the flues around the oven, and of the dampers and regulator, are both good, and the general appearance is such as to commend them to favorable notice. *Silver Medal.*

Magee Furnace. A good furnace with downward draft similar to the McGreggor, and with four vertical poles running through the space over the fire, affording an increased amount of radiating surface.

447. WILLIAM WHITE, *Boston.* Hot-Air Furnace, essentially the same as those heretofore exhibited by this house, and well known as "Culver's." The one now offered has a radiator of a new design, patented in 1859, by Mr. Simonds, of New York.

Cooking Range, with elevated Ovens, appears to be a good article but differs very little from others in its class now in use.

448. MADE AND PATENTED BY LITTLEFIELD, of *Albany, N. Y.* Morning Glory Stoves. These are a modification of "Littlefield's Railway Coal-Burner," for which a Medal was awarded to Littlefield at the last Exhibition.

298. SEAVEY & COMPANY, *Boston.* Combination Furnaces for Brickwork, and Portable. These furnaces are made with a downward draft, as the McGreggor and Magee are, but differently arranged. The smoke passes through two tubes placed in the radiator or dome over the fire-pot, and extending up about half the height of the radiator, thence through flues outside of the fire-pot, and passages under the fire-pot into the direct flue in the rear. The direct flue passes down behind the fire-pot, being open just above its level, and having a damper to control it. By means of this arrangement the whole surface of the fire-pot is brought into the air-chamber, and exposed to direct contact with the air, instead of being covered, as in the McGreggor and Magee, by the radiator and the flue-space between it and the fire-pot,—in the opinion of your Committee a decided improvement.

There is also an opening under the fire-pot, from the ash-pit to the direct flue, controlled by a valve or damper, through which, when the grate is being shaken or the ashes removed, most of the dust which would otherwise escape into the cellar, is carried off up the flue. This opening and valve operate also as a regulator, admitting the air in at the bottom of the smoke-flue to control the draft, but not allowing the escape of the gases into the cellar. The furnaces are well made, great care being taken to provide for the expansion of the fire-pot and plates around it. Your Committee recommend for them a *Silver Medal.*

Also a Parlor Stove and Coal and Gas Burner, similar to the one exhibited in 1856, for which a Medal was awarded. The Parlor Stove has an open front grate.

663. George W. Walker & Co., *Boston.* Lawson's Patent Furnace. This is also an improvement upon the McGreggor and Magee Furnaces, having the whole surface of the fire-pot exposed to direct contact with the air, and both a downward and direct flue. The smoke passes through a tube or flue, back of the fire-pot, into one *under the ash-pit,* thence by a return flue to another tube behind the first and connecting with the direct flue. It has also in the radiator over the fire-pot a series of tubes which pass through the radiator, leading the air from the bottom to the top of the hot-air chamber. These tubes being exposed to the direct action of the fire give an additional amount of radiating surface. The Furnace is very well made, being of heavy castings, and having all the doors ground and fitted air-tight.

Both this and Seavey's (No. 290,) are excellent Furnaces, and the Committee, being unable to say which is best, recommend the same award as for that. *Silver Medal.*

Also, Governor Cook Stove, Stewart's Coal-Burner, and a Sub-base Wood-Burner. This last is an air-tight stove, having a double radiating base with flues leading into it, located at the corners of the stove (within the stove body,) to convey the heat and smoke over its entire surface. *Diploma.*

219. D. Henius, *Boston.* Range and Furnace combined. A modified form of the Hot-Air Range so long used. The heating surfaces are very much extended, whether to any advantage in the consumption of coal can only be known by trial. Its use as a Furnace must, we think, be confined to the rooms over that in which it is placed. *Diploma.*

729. Levi Chubbuck, *Boston.* Three Littlefield's Base-Burning Furnaces. These Furnaces are well made and durable, and are upon the principle of the Railway Coal-Burner, for which a Silver Medal was awarded at the last Exhibition. They are a very superior article.

Four Portable Grates, well made, of good design and beautiful finish. *Bronze Medal.*

763. Walter Bryent, *Boston.* Hot-Air Furnace, well made, and of the same pattern as that exhibited by him in 1860, for which a Medal was awarded.

Radiating Hall Stove. A good Stove, of common form.

556. J. M. Read, *Boston.* Two Cooking Ranges, with Side Oven, similar to those heretofore exhibited. One of them has a drum of common form attached, to warm a room over the one in which the Range is set.

Gas Cooking Stove.

452. **Faucet & Hawkes.** Hot-Air Furnace. Portable Furnace. These Furnaces are very heavy and well made, having large radiating surface and good joints. They are very durable, simple, easily managed and easily kept clean. *Bronze Medal.*

Also, Parlor Gas-Burner. Solace Cook Stove, of Bowers & Pratt's casting.

Also, Cover for Parlor Grate. This is a cast-iron plate, quite heavy, having two or three holes in it, which holes are opened or closed by a sliding damper, and is intended to cover over the top of the fire in an open grate.

323. **Peter Martin,** *New York, by* **George F. Slade,** Agent, *Boston.* Peter Martin's Patent Warm-Air Furnace. This Furnace differs from ordinary Furnace. It consists of an oblong case of corrugated sheet-iron, supported by a cast-iron frame, heavy, and well bolted together. Within this is placed another sheet-iron case, smaller, and leaving a space of about four inches between it and the outer case. Within this last are the fire-pot (a simple cylinder,) and eight wrought-iron pipes, open at both ends, for the passage of the air, which extend from its bottom to its top, and so placed that while they increase very much the radiating surface, they are not liable to be overheated. The cold air passes into a chamber in the bottom of the Furnace, and through these flues (being heated in its passage,) into a hot-air chamber at the top, from thence in the usual way through pipes into the various rooms to be warmed. There is also a tight water-vessel near the top of the hot-air chamber, from which, by means of separate pipes, steam is carried into each of the hot-air pipes. There is also an arrangement by which the air is made to pass into the cold-air chamber, through water, to cleanse it from dust and other impurities. *Diploma.*

666. **George W. Wilson & Co.,** *Boston.* Wilson's Patent Air-Heating Furnace. This is a very well made article, containing a large radiating surface, well arranged, and many ingenious arrangements of flues, dampers, &c. In the opinion of the Committee, rather complicated for use among those who are obliged to trust the care of their heating apparatus to "engineers" from the "Emerald Isle." *Bronze Medal.*

352. **John Briggs,** *Boston.* Automatic Heat and Draft Regulator. An apparatus to be attached to the dampers of Furnaces and Stoves, and to the valves of steam-heating apparatus. It consists of a lever, operated upon or moved by a series of flat air-tight drums, the expansion or contraction of air in which causes the dampers or valves to open or close. It is very powerful, sensitive and effective. *Bronze Medal.*

760. Gilman Joslin, *Boston.* Heat Regulator. A very good modification of the well-known Arnott's Regulator, consisting of a lever very delicately and ingeniously arranged on the top of an iron tube within the Furnace, and extending from the bottom to the top of the air-chamber, and having on each side a brass rod, the expansion of which rods moves the lever, and consequently the damper or valve to which it is attached. *Diploma.*

328. Edward Whiteley, *Boston.* One Range for Hotels. One Range for Houses. The Hotel Range is a very well made and excellent apparatus, having large ovens, hot plates, water-back surrounding the fire, and capable of supplying a large quantity of steam and hot water. The bars of the grate also are hollow, and so arranged that there is a constant flow of water through them, thus increasing the quantity of hot water, and preventing the bars from being burned out. It is made of very heavy and thick plates, is therefore durable, and the best evidence of its efficiency, from those who have used it, was furnished us.

The smaller or House Range is also a good and well made article. *Silver Medal.*

155. J. Amory, Patentee, *by* W. W. Allmand, *Boston.* Model and Drawing of a House Furnace. Mr. Amory is the inventor and patentee of a new mode of constructing the fire-places under steam and other boilers, in which, by means of chambers or cavities formed by a succession of cast-iron bridges of a peculiar form, and extending across the fire-places, and into which, through perforations in the bridges, fresh air is admitted, all the gas and smoke are consumed and a great saving of fuel effected. This plan has long been before the public, and there is good evidence of its usefulness. He now proposes to apply the same principle in the construction for heating houses. The very imperfect model which he offered for our inspection did not afford us the means of judging whether or not the plan, so applied, would be of any advantage.

413. William Washburn, *Boston.* Davis' Radiator. A very good modification of the old Drum Stove, by means of which, where there is a good draft, an additional room, either above or at the side of the one in which a range or stove is placed, may be warmed. The addition of a damper of a new and ingenious form to change the direction of the smoke, and of a hot-air chamber in the drum, are improvements. *Diploma.*

870. S. H. Caldwell & Co., *Peterboro', N. H.* Soapstone Stove, with open grate and sliding doors, for coal or wood. A good article. *Diploma.*

924. **Charles Williams**, *Manchester, N. H.* Parlor Soapstone Stove, with double front, base and back, producing a downward draft, and adding much to its heating power and economy. It is of superior workmanship. *Bronze Medal.*

389. **Thomas A. Westcott**, *Boston.* Boston Model Cook Stove. Parlor Cook Stove. Neat pattern, but nothing new. Parlor Stove, for coal, with pipe to lead a stream of air from the ash-pit over the fire, to assist in consuming the gas.

544. **Timothy Tufts**, *Somerville, for* **Boston Fairhaven Works.** Parlor Radiating Stove. A sheet-iron Cylinder Stove, of oval form, having a hollow base and double top divided by transverse partitions, and six oval columns, three on each side, and so arranged that when the direct draft is closed all the smoke is made to pass through each of the pipes on one side, successively, down to the base and up those on the opposite side, till it finally leaves the stove through the direct flue, producing the effect of a long smoke-pipe. *Diploma.*

917. **Cape Cod Foundry Co.**, *Hyannis, Mass.* Bond's Ventilating Parlor Stove. The principal feature in this Stove, and that which is patented, "is the introduction of cold air from the bottom of the room, through the base of the Stove, into a double-wall fire-pot, where it is immediately heated and passed directly into the room without interfering with the draft of the Stove, in the heat from the coal, as it is now used in the common Stove." *Diploma.*

85. **Thomas Bradford**, *Boston.* Model of a Range. Water-back of the usual form, with the addition of sides or continuations at each end, so as to inclose three sides of the fire,—additions which the Committee do not regard as an improvement.

25. **John G. Perry**, *Kingston, R. I.* Three patterns of Cast-iron Stove Pipe Elbows. The ingenious manner in which they are made, (those for common iron being cast in two pieces, held together by a slot and a nub fitting into it, and those for Russia or ornamental pipe consisting of a skeleton of cast-iron, into which small pieces of Russia iron can easily be inserted,) the beauty of the castings, their durability, and, withal, the low price at which they can be afforded, render them worthy of especial commendation. *Bronze Medal.*

810. **J. I. Howard & Co.**, *Boston, by* **Dover Stamping Co.** Patent Damper. A simple and ingenious contrivance of a ratchet, by which the damper in a smoke-pipe can be placed and kept in any desired position. *Diploma.*

597. TAUNTON CRUCIBLE COMPANY. Samples of Stove Polish. A very excellent quality of black lead, or carburet of iron, neatly put up in small papers, for family use.

657. A. D. PUFFER, *Boston.* Grate Bars for Furnaces, Boilers, &c. Claimed to be "insulated, self-cooling and indestructible." A very good article. *Diploma.*

648. FRANCIS MORANDI, *Boston.* "Charcoal Cookery." A simple and good apparatus, to be added to a stove or range for summer use. *Diploma.*

741. WILLIAM F. SHAW, *Boston.* Eighteen Gas Stoves, of various patterns. For a similar display at the Exhibition in 1856, a Medal was awarded.

91. ARCHIMEDEAN VENTILATOR COMPANY, *Boston.* Archimedean Ventilator and Smoke Conductor, "consisting of a screw suspended within a conical tube, centred upon an imperishable substance, moving without noise, and being hung so delicately that the least breath of air will cause it to rotate." When so made, it will no doubt effect the desired object. *Bronze Medal.*

819. JAMES M. COOK, *Boston.* Car Ventilator. Of common use on railway cars.

679. JONES & DAVENPORT, *South Boston.* Gas-Burner and Stop-Cock combined. A good Burner, but the Committee see no particular use in the combination.

669. JAMES IVES, *Mount Carmel, Conn.* Hanging and Table Lamps. The Lamp is suspended by chains passing over pulleys, so that it can be pulled down from the lamp glass, to be lighted or have the wick adjusted, leaving the glass in the frame above. *Diploma.*

GAS FIXTURES, CHANDELIERS, &C.

There were a large number of patterns from MITCHELL, VANCE & CO., New York, said to be of *original*, and, certainly, of beautiful designs, highly finished, well manufactured, and fully equal to the best imported articles. There was the usual beautiful display of highly finished patterns from the well known and justly celebrated house of H. N. HOOPER & CO., and finally a large assortment of Gas Fixtures, Bronze and Kerosene Lamps, from WILLIAM CARLETON'S establishment. In the matter of workmanship, finish, accuracy of adjustment, and excellence of the castings, the two first are not excelled by any other manufacturers. In the matter of design, being purely a matter of taste, there is usually a difference of opinion. Your Committee have concluded to recommend the following awards, viz., to—

450. Mitchell, Vance & Co., *New York, by* S. A. Stetson & Co., *Boston.* For Gas Fixtures, Chandeliers, &c. *Silver Medal.*

866. Henry N. Hooper & Co., *Boston.* For Gas Fixtures, Chandeliers, &c. *Bronze Medal.*

333. William Carleton, *Boston, by* Whitney & Tappan. For Gas Fixtures, Lamps, &c. *Diploma.*

The last article on the list submitted was Petroleum Stoves. Of these there were two contributors. Gas Stoves have been long used, and, as far as the burning of the gas, or rather the application of the heat produced by its combustion for the various purposes, is concerned, there is but little difference between these and the ordinary form of Gas Stoves. But these Stoves not only burn, but they also manufacture or produce the gas, as it is wanted, from petroleum, naptha, &c. None of your Committee being chemists (to whom the subject properly belongs,) they cannot enter into the description or comparison of the processes by which this is effected. They, however, are constrained to say that in the use of either, *the greatest care is needed* to prevent accident, particularly in filling the reservoir or feeder while a fire is burning. They recommend to—

34. Morrill Petroleum Stove Co., *by* H. V. Degen, Agent, *Boston.* For a variety of Stoves and Furniture. *Bronze Medal.*

35. A. J. Griffin & Co., *Boston.* For Petroleum Cook Stove, Parlor Heater and Soldering Iron Heater. *Bronze Medal.*

IRON, BRASS, AND COPPER CASTINGS.

JUDGES:

George W. Robinson, Gilman Joslin,
Albert W. Smith.

The Committee on Iron, Brass, and Copper Castings, have given particular attention to the articles submitted to their charge, among which they find but one that is new and worthy of special notice; this is

591. Moses H. Freeman, *Boston.* Three specimens of Gas-pipe Tongs. A great improvement on anything before in use. They are so constructed as to admit of being readily adjusted to suit different sized pipes, by means of an eccentric attached to the bolt of the joint, which is registered, so that you are enabled at once to set the tongs to any required size, within their capacity, which is from four to six sizes for each pair of tongs. *Bronze Medal.*

81. John A. Winn & Co. *Boston.* Exhibit several articles of Bronzed Iron Furniture, Settees, Chairs, Flower and Umbrella Stands, Vases, &c., a good specimen of Bronzing.

The same firm exhibit a large variety of Weather Vanes, some very neat patterns, very tastefully got up. *Diploma.*

153. A. L. Jewell,* *Waltham, Mass.* Exhibit 73 varieties of Weather Vanes, some very neat patterns and good workmanship. *Diploma.*

270. Whipple File Co., *Boston.* A fine specimen of Black Lead Crucibles.

625. Whiton & Brothers. Specimens of Galvanized Iron Work, Blocks, Hooks, Rings, &c.

208. A. S. Morse. Specimens of Galvanized Iron Work, Blocks, Hooks, Rings, &c.

78. A. Dawes, *Waltham, Mass.* Case of Saws for Sawing Metals. A good article.

417. H. T. Litchfield, *East Boston.* Specimen of Bell Casting. A good piece of workmanship.

866. H. N. Hooper & Co., *Boston.* Specimen of Bell Casting. Excellent piece of workmanship. This firm received a Medal at the last Exhibition.

AGRICULTURAL IMPLEMENTS AND MACHINES.

JUDGES:

Joseph Breck,	Charles L. Flint,
Simon Brown,	Thomas E. Payson,
Charles P. Bosson,	N. P. H. Willis.

The Committee on Agricultural Implements and Machines have approached the duties assigned them with some diffidence, but with a full consciousness of the important nature of the investigations they were called upon to make. There is no branch of ingenuity more interesting than that which has for its object new and improved labor-saving implements for the cultivation of the earth, and to facilitate the labors of the husbandman. The progress which has been made in this direction during the last forty years has been of the most surprising character, amounting, almost, to a complete revolution. At the commencement of the period named, farmers were obliged to be contented with rude ploughs made by the village blacksmith, and ruder implements for other farm work,—heavy, uncouth and clumsy contrivances to help them in those things for which invention had hitherto slumbered. Of the great and wonderful variety of machines of superior construction which are now to be found upon every well-appointed farm, not one of them, forty years ago, was so much as dreamed of. Gradually, improvement began to make its way for the benefit of the farmer; how gradually may be judged by the fact that, in 1828, the first agricultural warehouse in the country was set up in Boston; and it remained for many years an enterprise peculiar to this city,—an object of interest and curiosity to all strangers. Eminent men from distant parts of the country visited it. President Jackson and Henry Clay were among the number who regarded it with the warmest interest, and from the reputation that it gained others were established slowly, until now, numerous warehouses and vast manufactories are required for the supply of the ever-increasing demands of the farmers for implements and machines. Meanwhile, invention, with its fecund powers, knows no exhaustion; it still labors for the farmer, and may yet produce machines before which those of the present day will pass into forgetfulness.

The Committee have endeavored, in the awards which they now submit, to do equal justice alike to the inventor, the agricultural public and the cause of agricultural mechanics.

860. A. BATCHELLER. Hay Loader. A new contrivance. The Committee think well of it. *Diploma.*

831 to 834. FACTORY CHEESES. Two specimens each from the factories of Petersham, New Braintree, Barre and Hardwick. The specimens that were tried proved good, except that from the Petersham factory, which was bitter to the taste. Of the other three specimens, that from the Barre factory was, in the judgment of the Committee, the best. The New Braintree and Hardwick Cheeses were of excellent quality, and would, perhaps, suit some palates better than the Barre Cheese. The Committee award to the

Barre Factory Cheese Company.	*Diploma.*
New Braintree Factory Cheese Company.	*Diploma.*
Hardwick Factory Cheese Company.	*Diploma.*

29. WILLIAM S. TUTTLE. Tongue Iron (Cattle). An ingenious and useful application. *Diploma.*

29. HORSE HOE. A machine which promises well. The Committee, while they regard the invention with favor, cannot pretend to decide upon its merits without seeing its operations in the field. The inventor, a practical farmer, claims that he has invented a Hoe which does the work efficiently.

34. FLOUR OF BONE. An article of undoubted merit.

68. PRUNING SHEARS. Very nice workmanship and of high finish.

76. George F. Shaw. Corn Sheller. Cheap, durable, and thorough in the work for which it is designed. *Diploma.*

88. George W. Holmes. Well Windlass. Very simple in construction. It works with ease and safety, and possesses great advantages in having a self-emptying and lowering bucket, and in the arrangement for lowering the bucket. *Diploma.*

113. Ames Plough Company. Invoice of Agricultural Implements contributed by the Ames Plough Company, which included a great variety of the Implements and Machines named in their catalogue. Many of these Machines are of the highest value. As a collection they, together with the invoices of other agricultural warehouses—which are mentioned in their proper place—represented better than could be done in any other way the wonderful progress which has been made by our inventors and constructors in the way of producing invaluable labor-saving Machines for farming operations. In consideration of this fact, the Committee, with great unanimity, award a *Bronze Medal.*

For the Little Giant Wheel Jack. *Diploma.*

113. Ames Plough Company. Wood's Two-Horse, Hinge Bar, Spring Seat Mowing Machine. Davis' Two-Horse Flexible Bar Mowing Machine.

865. Buckeye Mowing Machine.

477. O. R. Chaplin. Eureka Mowing Machine.

722. J. E. Taylor. Ohio Mowing Machine.

125. Newhall & Stebbins. Granite State Mowing Machine.

370. Alzerus Brown. Union Mowing Machine.

The Committee regret exceedingly that in the awards they are able to make, they are necessarily restricted by their own imperfect knowledge of the Machines submitted for their judgment. Nor was it possible, under the circumstances, to improve that knowledge. To speak definitely of the practical value of the improvements that have been introduced in Mowers, a Committee must take the Machines to the field and there, with patient and careful attention determine, by the actual operation of each Machine, upon its relative value. The Committee beg that it may be understood, therefore, that in the awards they have made, they have been governed by this principle: the Machines they have been acquainted with, have tested in various ways and at different times, they have pronounced definitely upon; of those which are new to the Committee, or have never been tried by a majority of them, they simply express an opinion as to the probable value of the improvements they contain.

To each of the Machines of the latter class, however, the Committee have deemed it proper to award the Bronze Medal. And they have done this to mark their sense of the importance they attach to inventions in this direction. There remains no longer any doubt that the Mower must always stand among the most valuable and useful implements of agriculture. And while the Committee cheerfully acknowledge the great ingenuity and decided merits of the Mowers to which they have awarded a higher prize, they are far from asserting that some of the new Machines do not contain principles of equal value, or, perhaps, of greater utility. They are equally far from saying, too, that invention has been exhausted in any Mower that now exists. And it may yet remain for some highly endowed and fortunate inventor to produce a Machine that shall combine every advantage possessed by Machines now before the public, with greater ease of draft, simplicity of construction, effectiveness in the field, and economy of price. And they trust that at a not distant day, a Machine will be constructed upon the principles of rotary motion.

Buckeye Mower Machine Company. *Silver Medal.*

Wood's Two-Horse Flexible Bar Mower. A Machine of tried merit and approved value. *Silver Medal.*

Davis' Two-Horse Flexible Bar Mower. *Bronze Medal.*

O. R. Chaplin. Eureka Mower. A Machine somewhat complicated, but embracing many new features. *Bronze Medal.*

Newhall & Stebbins. Granite State Mower. The Committee entertain a favorable opinion of this invention. *Bronze Medal.*

Alzerus Brown. Union Mower. Also favorably regarded. *Bronze Medal.*

J. E. Taylor. Ohio Mower. Remarkable for simplicity of construction; embraces truly valuable features. *Bronze Medal.*

928. JAR OF PHOSPHATE OF LIME. The Committee have tested Phosphates of Lime, and when found pure, they are excellent. The present specimen appears to be of fine quality—the pure article.

149. SOLE TILE FOR DRAINING LAND. Good. Excellent for their purpose.

150. PATENT CATTLE TIES AND HALTERS. A convenient arrangement.

165. SIMONDS BROS. & CO. Mowing and Planing Machine Knives. Very excellent display. *Diploma.*

223. CUTTING AND GRASPING SHEARS. Very neat, ingenious and useful for the grasping of flowers, delicate fruits and clusters of grapes. A decided improvement on the implements now in use.

922. J. P. CORBIN. Butter Worker. An ingenious and useful contrivance. *Diploma.*

271. GARDEN VASE AND IRON REVOLVING CHAIR. Neat, pretty and substantial.

272. IMPROVED FRUIT AND WORK STANDS. Very neat and attractive.

350. FEED BAGS, BASKET AND BUCKET. Useful.

403. DANIEL PERRY. Yankee Water Elevator. *Diploma.*

701. L. S. STARRETT & CO. Meat Chopper. The Committee think it a very efficient machine. *Bronze Medal.*

905. PATENT CHURN. Very simple and useful. It is the old Dasher Churn, with a power attached. A good article.

367. PARKER, GANNET & OSGOOD. Thresher, Separator and Cleaner combined. A fine invention, which does its work in the most thorough manner. *Diploma.*

238. WILLIAM G. BELL & CO. Chopping Machines and Sausage Filler. These Machines possess great merit. No. 1 Chopper has a block thirty-one inches in diameter, and is capable of chopping from 400 to 500 pounds per hour. They possess great strength, and are finished off in a workmanlike manner. The Filling Machine is the best thing of the kind your Committee have seen. *Bronze Medal.*

368. J. NOURSE, Agent. Invoice of Agricultural Implements. *Bronze Medal.*

THE IRON BEAM UNIVERSAL PLOUGH, which forms a portion of this invoice, is worthy of marked attention. It introduces a radical change in the construction of the mould-board. At one bold step the inventor passes from the concave form to the convex surface. This is the first striking feature in the Plough, and in this respect it is unlike other ploughs of American construction. The inventor justifies the innovation by clear, concise and practical reasoning. He claims that, having a convex instead of a concave surface, the Plough runs free and clear in all heavy and adhesive soils; that, consequently, it is of a decidedly lighter draft, and the desideratum of all ploughing is obtained—that of thoroughly pulverizing the soil. By this form of the mould-board, as the furrows are turned they do not drop in their place, smooth, unbroken slices, only inverting their position, with the cohesion of the earth undisturbed, but the furrow-slices are stirred up on the mould-board, and when they are dropped show that the earth is disintegrated, mellowed, and the land is left in a good condition to receive a crop.

The Universal Plough is also changeable. First—As a sod or grass Plough. Second—As a stubble or old ground Plough. Third—As a Michigan or sod and sub-soil Plough. In addition to these forms, the same principle is applied to the "IRON BEAM SWIVEL PLOUGH, for level lands, as well as for side-hill ploughing." Swivel Ploughs adapted to level land have been required by farmers since mowing machines have come into general use. Turning the furrows all one way, making no ridges by back furrowing, nor any ditches or dead furrows, the field is as level after the Swivel Plough has run through it as it was before ploughing.

Your Committee are unanimously of the opinion that the principle here applied in the construction of the Plough is of conspicuous importance, and they say, with great confidence, that the Iron Beam Universal Plough is entitled to the highest award which the Society bestows upon "very valuable and meritorious inventions or improvements."

Gold Medal.

BURT'S PATENT INDEPENDENT TOOTH HORSE-RAKE, in the same invoice, is so constructed that each tooth operates independently. The teeth stand at the same angle as in the hand-rake when in operation, and gather the hay on precisely the same principle. A very desirable improvement. *Diploma.*

HARRINGTON'S CONVERTIBLE SEED DROPPER AND HAND CULTIVATOR, also in the same invoice, is a decided improvement for the sowing of field and garden seeds, and to facilitate the raising of roots and vegetables. It is constructed in such a way as to be convertible from Seed Dropper to Cultivator very readily. By means of a neat little contrivance, all slides or reeds are dispensed with,—a consideration of importance to those who have been troubled by losing such appliances. As a Hand Cultivator it is easily adjusted to any required width or depth. The combined machine marks its rows, makes its drill, drops the seed, covers them, and presses the earth over them, all in the same operation. *Bronze Medal.*

169. W. S. WEYMOUTH. A Lawn Mower. This machine appears to the Committee to supply a want that has long been felt, for some competent and efficient implement to mow our lawns and grass plots. The absolute need of some machine for this purpose has been so great, any inventor who might produce one was sure to be received with favor, as a beginner in a branch of construction which others might follow with greater results. But the machine before us appears to the unanimous

judgment of your Committee to be just the thing that has been waited for. They do not express an absolute judgment upon it, because they have had no opportunity to see it in operation; they entertain hardly a shadow of a doubt, however, regarding its capabilities for efficient work. It has two wheels and an eighteen-inch cutter bar of the Hussey pattern. The machinery necessary to operate the knives is inclosed in the right hand wheel, which is one and a half inches in thickness. It appears to be very simple, well made, and admirably adapted for the purpose it is designed for—to take the place on the lawn that the Horse Mowers occupy in the fields. *Bronze Medal.*

392. JOHN G. PERRY. Feed Cutter. In this machine the knives are constructed so that they cut obliquely upon an iron roller in such a manner that their edges do not come in direct contact with it, but meet it so that the revolution is designed to sharpen rather than dull them. The machine works to complete satisfaction and is regarded by us as an improvement worthy of a *Bronze Medal.*

386, 405, 889. TREE PROTECTORS. These are various contrivances for the protection of trees from insects—an object of the first importance—but we decline to recommend either of them in the absence of actual evidence of their efficiency; besides, if they shall prove to be efficient, a great objection to recommending either of the plans before us is their too great expense for general use. There are many hundred gentlemen who can doubtless apply Protectors like these, or more expensive ones, without inconvenience, but the practical farmer, who has many hundred trees to preserve, must look out for some less costly mode of protection.

392. JOHN G. PERRY. Show Table with Model Machines for Agricultural and Household use. This Table of Models was examined with close attention and with great interest. The Models consisted of Meat Cutters, Sausage Fillers, Stove-pipe Elbows, Window Fastener, Mowing Machine and Harvester, Soap Cutter, Lock Knives, and other articles. A Feed Cutter in this collection was also exhibited, independent of the model, which the Committee have passed upon in another paragraph. The models examined show great vigor and fertility of invention, and many of the principles applied appear to have been combined in useful and valuable form. *Diploma.*

396. FROST, DERBY & FLINT. Three bundles of Scythe Snaths. A valuable improvement. *Diploma.*

572. FRUIT GATHERERS OR SELF-EMPTYING BASKETS. Useful contrivances for very important and sometimes delicate work. Admirably designed for their purpose.

585. D. C. COLBY, *Boston*. Distributor of Fertilizers. A very important labor-saving machine for dropping guano, bone dust, phosphates, plaster, ashes, &c. It entirely avoids the stooping posture and wasteful and laborious methods. Useful and good. *Diploma.*

632. SELF-ADJUSTING CHURN. Excellent; well made and of good materials. The Committee are favorably impressed with it.

709. PARKER, GANNET & OSGOOD. A very full and interesting collection of some of the most valuable and improved implements and machines known to our agriculture. For the reasons stated in our remarks upon No. 113, we award a *Bronze Medal.*

Palmer's Horse Pitch Fork, in this collection, is a novel and useful labor-saving contrivance. *Diploma.*

782. SHERMAN R. NYE. Horse Rake. A very superior machine, and possesses some advantages which other Horse Rakes cannot claim, the principal of which are: it is operated by gear from its own centre; there is an independent action of the teeth, and any tooth may be easily removed. Besides these, the inventor claims that it is operated so easily a small boy can work it, that it is adapted to uneven ground, and that in heavy grass and in rowen it will do its work in the most thorough and satisfactory manner. *Bronze Medal.*

817. C. L. FOWLE. Beater Press, for baling hay, straw, cotton, wool, rags, hemp, tow, hops, flax, tobacco, and all other compressible materials. A machine of high and unquestionable value and utility. The Committee are perfectly satisfied in regard to its decided merits. *Silver Medal.*

21. MODEL OF A FIRE ESCAPE OR SAFETY STABLE FOR HORSES AND CATTLE. Very desirable for large stables in case of fire.

886. AUGUSTUS HARLOW. Nest of Baskets. Very thoroughly made; excellent. *Diploma.*

372. GEORGE E. BURT. Stationary Horse-Power. This is the most perfect Stationary Horse-Power that has been brought to the notice of the public. The wood frame-work is constructed similarly to most of the Tread or Endless Chain Powers in use; but the arrangement of the iron work or running gear is almost entirely new. The links are made with cogs, and the driving gear wheel is placed back from the end, directly under the horse, and is of sufficient diameter to cog into the chain links, both at the top and bottom of the gear wheel. By this device the propelling force of the horse is always acting directly on the top of the driving gear on the same plane, and consequently there is no loss of power or increase of friction. Also, the running sections of the

chain on the bottom track are acted upon in the same manner as the top portion. The power thus acts directly on the chain to propel it up the incline plane, (and not directly around the end of the track, as with machines constructed with spiders, or rolls, on the end;) thus the connecting pivots upon the chain are relieved of all the strain and friction usually caused by passing the end track.

By this cogging into both the top and bottom. a perfectly smooth and regular motion is given to the chain. All the trembling and jerking motion, usually caused by the sections of the chain passing the ends from the top to the bottom track, is entirely avoided. Also, the difference in the tension of the chain passing the ends is so entirely overcome that the manufacturer may construct Powers with any desirable length of link or section. This enables him to dispense with half the number of axles and wheels, thus saving a large amount in making the Power; also saving the friction of the wheels and the expense of lubricating them. By this device he is enabled to construct his wheels of large diameter without making the machine cumbersome. All the connections or pivots, the axles and wearing surfaces, are chill-hardened and very durable. The gears and band-wheel are readily changed from one shaft to the other, or from one side of the machine to the other. The links and treads are so constructed that the tread holds the link and axle that supports the horse, and dispenses with the supporting rods or axles extending across the chain, as commonly used in horse-powers. The driving shafts are hung in pivot boxes, so constructed that if the machine should set out of level, the shaft would turn free in the boxes. The treads are so simple in construction that any one of common ingenuity can make them without the aid of machinery; and they can be removed and replaced without disturbing any part of the machine. *Silver Medal.*

369. WHITTEMORE, BELCHER & Co. Invoice of Agricultural Implements, embracing ploughs, root-cutters, corn-shellers, harrows, cultivators, horse-hoes, hay-cutters, (four patterns,) manure, hay and pitch-forks, churns, apple-parers, and one hundred and fifty varieties of seed. A very interesting collection of valuable machines and implements.

Bronze Medal.

MILITARY GOODS, FIRE-ARMS, &c.

JUDGES:

Henry Lee, Jr., Thomas E. Chickering,
Edward Wyman, Charles W. Dabney, Jr.,
Charles R. Codman.

The Military Goods submitted to this Committee are neither numerous nor various.

On the other hand, the war of the past five years has so stimulated invention in the department of Fire-arms, that we have been embarrassed by the great number of very valuable and meritorious inventions and improvements exhibited. Forty varieties of breech-loading arms deemed worthy of a trial have been tested by the board of army officers lately convened at the Springfield Armory, and about half as many have been entered at this Exhibition.

The progress has been so rapid that arms for which Gold Medals have been granted at previous Exhibitions, do not compare with those which, by the standard of to-day, are only entitled to a Diploma.

Notwithstanding this advanced criterion, the merit of many of the inventions, and their value to the world, is so great that your Committee have been constrained to award a much larger number of Medals than would, under ordinary circumstances, justly fall to this department.

In judging of arms, the Committee have considered them with reference to their intended use; the very conditions of their superiority for one service necessarily unfitting them for some other. As any form of barrel or proportion of charge are common property, we have regarded only the mechanism of the lock and frame, and the appurtenances for loading and closing the breech. The safety, simplicity, solidity and efficiency of these parts have determined our awards.

1521. A. W. Pollard, *Boston.* Rich Fringes, Tassels, Epaulets and Baldrics, among the articles imported. Of those manufactured for the exhibitor,—Belts, Sashes, Shoulder-straps, Masonic and Presentation Swords,—all of the first quality; Masonic Regalia, delicately painted and embroidered.

For the superior workmanship of some of these articles, so great as to render it almost a new application of material, the Committee award a *Bronze Medal.*

1372. Charles O. Eaton, *Boston,* exhibits a Regimental Stand of Colors, made of heavy silk, and very well painted and emblazoned. *Diploma.*

1236. L. SOMERBY, *Boston*. A Military Standard. Very artistically painted. *Diploma.*

1260. LAMPRELL & MARBLE, *Boston*. Four Flags. Thoroughly well made. *Diploma.*

121. W. MANUEL, *Boston*, exhibits a patent Knapsack, well made. A thin metal yoke brings the weight chiefly on the shoulders and small of the back, leaving the lungs free. Whether the rigidity of the yoke would bruise the collar-bone and upper part of the chest and back, could only be ascertained by wearing the knapsack loaded on a long march.

As a possible improvement in construction, deserving a fair trial, the Committee award to the inventor a *Bronze Medal.*

353. JOSEPH TONKS, *Boston*, exhibits Telescopic Sights for Rifles, very nicely made and powerful; one Target Rifle; two Double Barrelled Sporting Guns, and a very superior Fowling Piece, every part of which was grown and made here.

The stock is elegantly mounted with silver, the locks very perfect, and the barrels of laminated steel. Neither the barrels nor any portion of the locks were imported. The manufacture of every part of a gun of this superior quality in this country is a novelty of sufficient importance to entitle the maker to a *Gold Medal.*

806. PALMER & BACHELDERS, *Boston*. Case of Fire Arms, *by* E. REMINGTON & SONS, *Illion, N. Y.*, containing Revolvers of all sizes, from the Revolving Breech Rifle to the Pocket Revolver; also Repeating Pistols and Vest Pocket Pistols; — the last two use the Metallic Fulminating Cartridge; — also Rifled Muskets of the Springfield pattern.

The mechanism of all of these arms seems very perfect; they are all highly, some of them superbly finished.

Of the Revolvers we shall speak hereafter, comparing them with others.

The Rifled Cavalry Carbine is a single shot breech-loader, and uses a copper fulminating cartridge. In this arm everything is fixed and stationary, except the breech. This is a thin piece of steel, which hinges upon a pivot screw on the under side of the barrel, only when the arm is at full cock, which may be considered an objection.

This breech can be easily turned down with the finger, the cartridge inserted, and the breech closed again.

This apparently slight breech is struck by the hammer in firing, and held secure by the main-spring.

The opening of the breech partially ejects the spent cartridge. Except while loading, the lock can be half-cocked.

For safety, simplicity, handiness, and rapidity of loading, this arm deserves a *Silver Medal.*

349. JOHN P. LOVELL, *Boston.* Revolving Pistols of every variety of size and finish, from ten different manufacturers. Of these, Allen & Wheelock's, Remington's, Whitney's, Colt's and Bacon's are loaded with powder and ball, and fired with a cap.

The three first-named are stronger than Colt's, in having a housing which connects the barrel with the stock; Allen's is more easily loaded than any; Bacon's is a cheap imitation of Colt's. A few years ago, these arms would have been esteemed very valuable inventions; they have now been superseded by the revolvers which use a metallic fulminating cartridge and require no cap, whenever the supply of these cartridges can be renewed.

Of this class, Mr. Lovell exhibits Smith & Wesson's, Moore's National, Slocum's and Sharp's. Slocum's is ingenious; Moore's requires a cartridge with a flange at base, which is difficult of adjustment; Smith & Wesson's excels the others in handiness, the cylinder being disengaged by simply turning the barrel on a hinge, and taken out to insert or remove the cartridges, which can be pushed out by a fixed ramrod. The workmanship is also superior.

As the best of the metallic cartridge revolvers, — a great improvement on those which use powder and ball, and need a cap, — the Committee consider the Smith & Wesson's pistol entitled to a *Gold Medal.*

And they award to Allen & Wheelock's, Remington's and Colt's, as the best of their class, highly rewarded in past years, a *Diploma.*

167. SPENCER REPEATING RIFLE COMPANY, *Boston.* A Case containing seven arms. The Spencer Rifle, patented in 1860, is a breech-loader and repeater also. Seven copper-cased fulminating cartridges are deposited in a metal-sheathed magazine in the butt. To load, you withdraw a tube from the butt, and drop the cartridges, ball foremost, into the magazine, insert and lock the tube.

The magazine being charged, the first cartridge is thrown forward into the chamber of the barrel by a spiral spring within the tube, on moving the guard lever downward to a stop, and immediately drawing it back.

All this time the hammer remains down, and is only cocked when ready to fire.

After firing, by repeating the downward and backward movements of the lever, the exploded shell is thereby ejected, and the second cartridge simultaneously thrown forward into the chamber.

The seven cartridges can be discharged in ten seconds. The lock can be kept on half-cock, while the cartridge is in the barrel.

Captain Dyer, Superintendent of the Armory at Springfield, thoroughly examined this rifle in 1861, and reports that, after being laid on the ground and covered with sand, no clogging was produced; and that the lock and lower part of the barrel were soaked in salt water and left exposed, and the rifle then loaded and fired without difficulty.

A board of officers appointed the same year to inspect and try the arm, state that "in firing it is accurate, the range good, the charge used smaller than is generally used in small calibre; the cartridges, being in copper tubes, are less liable to damage; the rifle is simple in construction, and less liable to get out of order than any other breech-loading arm now in use."

A metallic cartridge maker asserts that it has been fired five thousand times without needing cleaning, and sixteen thousand times without needing repair. Generals Grant, Rosecrans, Hooker, and many other officers, also the Secretary of the Navy, pronounce it the best repeating rifle in use. An arm, safe, simple and durable, which makes one soldier as efficient as ten armed with muzzle-loaders, is certainly a valuable improvement; and we have high authority to confirm our opinion that the Spencer is, on the whole, the best repeating rifle for the rough wear of a campaign. The Committee award a *Gold Medal.*

287. WILLIAM READ & SON, *Boston*, exhibit three Brass Cannon, most beautifully finished and mounted; a very perfect armament for a yacht or merchant ship; which deserve a *Diploma.*

Also three cases, containing ten varieties of Rifles and Carbines; two of which are Repeating Rifles, — the Spencer, already described, and the Henry.

Henry's Repeating Rifle, manufactured by the New Haven Arms Company, carries fifteen cartridges in a magazine under the barrel, extending its entire length, which is opened by forcing up a spiral spring, and turning a metal sleeve around the muzzle. The forward and backward motions of the guard lever not only eject the discharged shell and deposit a new cartridge in the barrel, but also cock the gun.

This rifle has been preferred to the Spencer by many officers whose commands have been armed with it, not only for its more rapid fire (at least three to two), but also for its accuracy and range. On comparing these two arms, the Henry seems superior:

1. In carrying fifteen, instead of seven cartridges.

2. In requiring two movements, against three in the Spencer.

3. In having the tube of magazine immovable, whereas the tube of the Spencer has to be withdrawn to load, and is thus liable to be dropped, lost or injured by exposure to dirt or weather.

4. In the hammer striking the cartridge at both sides of base; the Spencer on one only.

The Spencer excels the Henry in the following particulars: —

1. That the hammer can be kept at half-cock, while that of the Henry cannot.

2. That the magazine is closed, while a groove exposes that of the Henry to dust and weather.

3. That the metal sleeve round the muzzle of the Henry may get rusted upon the barrel, and not turn.

4. That the Spencer, carrying its cartridges in the stock, is better balanced.

While, therefore, the Henry Rifle has greater capabilities, its liability to injury constrains the Committee to award it only a *Silver Medal.*

[NOTE.—A pamphlet descriptive of the Henry Rifle, placed in our hands by the exhibitor, referred to a more perfect arm, which we have seen and examined, and feel bound to allude to; although our award cannot be affected by any improvements not displayed at the Hall.

The modifications are:

1. That, while the magazine remains in its old position, the sleeve round the muzzle, liable to rust, and impairing the strength of barrel, is given up; and an opening on the under side of stock, forward of guard, very accessible, and covered by a slide easily pushed forward, substituted.

2. That the magazine is closed.

3. That the safety-plug in the muzzle end of magazine determines an explosion (if one should occur) in that direction.

4. That the hammer can be left at half-cock.

5. That by the insertion of a cone, the arm can be used with a cap and common cartridge.

This Rifle, thus improved, is, in the judgment of your Committee, the most perfect and complete arm yet manufactured.]

The instances adduced by officers show that the advantage derived from a repeater consists not only in the greater rapidity of fire, but in the greatly prolonged power of the soldier to repel or inflict injury in the many emergencies constantly occurring in war, in which his life, or the safety of the command, or the rout of the enemy, depend on his having a reserved fire.

This has influenced the Committee to rate the single shot breech-loaders, of which Messrs. Read & Son exhibit eight varieties, below the repeaters.

Of this class the Remington Carbine has been pronounced by the Committee the best cavalry weapon; and the most serviceable arm for infantry is the Peabody Rifle, — a strong, well-built piece, with the regular side back-action lock, also half-stocked.

By a forward movement of the guard, the breech, which is one solid piece, and which hinges upon a pivot screw at its butt end, is inclined forward and downward, and on this inclination the cartridge slides almost of itself into the barrel.

Bringing the guard back to its place, the gun is ready for firing. The shell of the cartridge is thrown out by the same motion that opens the barrel; the breech-piece, in being pushed down, strikes upon a small steel elbow, causing the other arm of this elbow to eject the shell completely (an improvement over any spring ejector.) In this arm, the hammer in firing strikes a plunger, and the plunger the cartridge. The Committee award a *Silver Medal.*

The Maynard Rifle or Carbine is peculiar in using a brass cartridge-case, which, while it does away with all escape of gas at the breech, can be re-charged many times, and which enables one to measure accurately the charge of powder and swage the ball, which conduces to precision in shooting. With these cartridges the ball is placed perfectly true in the barrel, the axis of the ball exactly coinciding with the axis of the bore, which is all-important in nice shooting.

The barrel swivels on a pin near the breech (an objectionable feature.) By throwing forward the guard the muzzle is dropped, the breech raised for insertion of cartridge, and the empty cartridge-case partially ejected.

The superior workmanship, and the nice adjustment of the ammunition, combine to make this the most accurate breech-loading sporting rifle, for which the Committee award a *Silver Medal.*

The Ballard Rifle uses the fulminating copper cartridge, and is also provided with a nipple for a percussion cap. With this gun the exploded shell can be re-loaded with a common charge of gunpowder, a combination which makes it valuable for military or sporting use.

The forward movement of the guard drops the whole breech, opening it for the insertion of the cartridge, and places the lock at half-cock (a good feature.)

The cartridge has to be ejected by pushing a knob on under side of barrel.

On the whole, this beautiful Rifle is not quite so nice and precise as the Maynard, nor is it so simple and solid as the Peabody; but, as a combination, it deserves a *Silver Medal.*

The Wesson Rifle has the objectionable feature of the Maynard, the barrel swivelling on a screw near breech; the mechanism less simple, comprehensive and solid than the preceding; one admirable feature, is that the gun can only be opened and loaded while at half-cock.

Bronze Medal.

The Allen Rifle somewhat resembles the Peabody Rifle in its mechanism; but the parts are lighter, and so small as to make it difficult to load. *Bronze Medal.*

The Sharp, Burnside and Warner Carbines have been before the public too long to need description.

Messrs. Read & Son also exhibited Colt's Revolvers, Rifles, Shot Guns, and Pistols from army down to pocket sizes; some of them very elegantly mounted and elaborately finished, workmanship very good. Colt's arms, which in their day were such an improvement, are still extensively sold, chiefly to be used where fulminating cartridges cannot be had. We have in another place adjudged a *Diploma.*

927. **William C. Dodge**, *Washington, D. C.* A Cartridge Shell Retractor.

914. **R. T. Woodward**, *Roxbury.* An old United States Musket. The stock elaborately carved by an Union soldier in hospital. A relic of the late war.

544. **Timothy Tufts**, *Somerville.* A Breech-loading Cannon of the revolver species, mounted on a three-wheeled iron carriage. A cylinder with ten chambers revolves vertically on a pivot at the breech. The upward action of a handle brings one of the chambers into line with the barrel; a downward action fires the gun and cocks it again.

The cannon can be used with cartridges or compressed powder, and fired with a cap or tape. The mechanism is ingenious and simple; the model exhibited is a one-pounder, and weighs, with carriage, six hundred and sixty pounds.

The inventor states that it scarcely recoils at all; that it has been fired seventy times a minute, and five hundred times within fifteen minutes, without getting too hot; that at two hundred feet it placed a ball five times in a bull's eye the size of a half-dollar, and perforated a green pine log thirty-two inches diameter. Its capability is very great, and it seems to the Committee worthy of consideration and a fair trial.

Bronze Medal.

805. **Putnam Machine Company**, *Fitchburg.* A Blakely Steel Gun.

MARINE ARTICLES.

JUDGES:

Robert B. Forbes, George D. Wise,
Joshua Baker, H. Hutchinson,
Eben Howes.

The display of contributions in this line is neither very extensive nor remarkable. We offer the following summary:—

MODELS OF VESSELS.

168. McKay & Aldus, *East Boston.* Five models of Paddle-wheel Steamers. As the dimensions, displacement, lines and power are not given, we can only say that they are good models for speed and light draught.

One Propeller model, by same parties, to which the same remarks apply.

20. W. R. Varney, Naval Architect, *East Boston.* A model of an ocean Steam-ship Propeller. A model of a large carrying Ship, and one of the Schooner Venus. All good of their kind, so far as we can judge from a casual inspection, without data as to capacity and other elements.

190. J. H. Norwood. Schooner Louisa, with Sails. A fair model; the cut of sails indifferent.

423. Leonard Bayley. Fancy Yacht. Very well got up, and the best of the lot of this description of toys.

465. W. Williams. Schooner Yacht. Sails very well cut; hull in details inferior to No. 423.

478. George Matthews. Schooner Yacht without Sails. A very pretty toy of the kind. *Diploma.*

502. J. Davis. A full-rigged Ship in glass case, with all sails set, illustrating the Howes rig.

203. A Full-Rigged Ship, without Sails. A fair model. The details exhibit much skill. Spars out of proportion to the hull.

695. Arthur H. Clark. Model of a Yacht. Very sharp and much cut up. We should say she would be wanting in stability. Fast in smooth water, if not over-sparred. Being made by an amateur it deserves commendation.

671. John H. Clapp, *Charlestown.* Yacht. A pretty toy, very well got up.

1650. **John Miller**, *East Boston.* Miniature Ship in glass case. This is a very fine specimen of this kind of thing, very elaborate in detail and of good proportions, exhibiting great patience. *Diploma.*

583. **A Small Model**, imperfectly illustrating a mode of using cannon under water.

Contributed by R. B. Forbes. Model of the Kearsage, made by mechanics of the Kittery Navy Yard. A beautiful specimen of this kind of fancy work.

ARTICLES OF GENERAL UTILITY.

479. **William Woodbury**, *Chelsea.* Model of a Spring Traveller. It consists of a combination of iron and vulcanized rubber, by which the sudden jerk of the sheets of fore and aft sails is much lessened. It is an excellent contrivance for lessening the wear and tear of sails and rigging. *Bronze Medal.*

482. **A. W. Laflin**, *Boston.* Galvanized Iron Lock Hook. A useful article, so contrived that it cannot unhook, and requires no mousing. *Diploma.*

95. **McIntyre & Gleason**, *Boston.* Colossal Figure-head, representing an Indian. The figure is well proportioned, in a good attitude, compact, and not liable to be broken by the sea. *Silver Medal.*

192. **E. Warren Hastings**, *Boston.* Colossal Figure-head. A female figure in the style of Joan of Arc. Very spirited and life-like. *Bronze Medal.*

60. **Peter Lear**, *Boston.* A small model, imperfectly illustrating the horizontal submerged paddle-wheel. Also, his Ventilator for vessels, school-houses and other buildings. The wheels are inclosed in boxes. The paddles project from the sides of the vessel. By means of a tube on each box, which can be opened or closed at pleasure, the atmospheric pressure is admitted or excluded at will; by the introduction of the air the effect of the wheel revolving in the box is much increased. Some years ago the writer saw a large model exhibited, and he can vouch for the good effect of admitting air. Your Committee are of opinion that this mode of propulsion combines the advantages of the propeller and the vertical paddle-wheel, while it is free from their most prominent objections, and that it would be specially suitable for war-vessels carrying canvas of the old style of construction. *Bronze Medal.*

The Ventilator, as seen in operation some time ago by the writer, is a good contrivance for expelling foul air from ships and buildings. *Diploma.*

209. Samuel Hill, *South Boston.* Samples of Chain and a peculiar Sheeve. The Sheeve is specially adapted for operating chains, as in tyes and sheets, and other appliances afloat and on shore.

280. Sewall, Day & Co., *Boston.* Very fine specimen of Cordage. We can scarcely class this rope among articles of utility, as it is too fine for the demands of commerce. *Bronze Medal.*

489. R. T. Dodge, *Boston.* Specimen of Oars.

635. Winsor & Whitney. Specimens of Oars and Sculls. These specimens are very neatly finished, and made of excellent material. *Diploma.*

835. Model Anchors. Two small highly finished model Anchors. The stocks appear out of proportion to the shanks, and the shanks are too long.

853. S. N. Miller, *Dedham.* Model of Compound Anchor. This anchor has had some tests in times past, and is highly spoken of by parties who have tried it. It has no stock, and is easily stowed. Your Committee deem it to be an improvement and worthy of further trial. *Bronze Medal.*

157. M. J. Hearn, *Boston.* Purchase Block for Rope Strap. A very nicely made article.

567. Duncan & Davenport, *Bath.* Two Blocks, with highly finished galvanized Straps. This description of Block is well known and has long been extensively used.

213. E. B. Vannevar & Co. Side Lights. The hinge of these Lights is new to us, and can be set up by a screw so as to obviate the leak often found in the ordinary hinge. The glass and its frame can be more easily removed for repairs than the Side Lights in general use. *Bronze Medal.*

871. Tufts Brothers. Side Lights. Red and green glass for steamers and sailing vessels. These are of the lenticular type, pressed glass, and a well made article in general use. *Diploma.*

467. Charles R. Fisher, *Chelsea.* Gaff Connection, full size, and a model as applied to a mast. This apparatus has some advantages over the jaw and saddle in common use, but not enough, considering the increased cost, to make it a more popular article.

526. A. Gilman, *Charlestown.* A model, imperfectly illustrating a new feathering Paddle-wheel or Float. The mode of accomplishing the desirable object, attained at great cost and great weight by the

Morgan wheel, appears to be very simple. If the feathering can be done (by the process indicated, rather than fully illustrated, in this model,) on a large scale, and with rigidity sufficient, we should consider it an improvement, but we cannot decide upon its merits when so imperfectly illustrated.

532. CONTRIBUTED BY JOHN PIKE, Agent for the MARINE SIGNAL CO., *of Wallingford, Ct.* Fog Alarm or Fog Whistle and Leak Alarm. The Fog Alarm was patented during 1864. It is designed to be placed on board of vessels, where it is to be operated by hand generally, but where it will operate when the motion of the vessel is quick enough. It is also designed to be placed on boats, buoys, or other floating constructions, where it is to be operated by the motion of the waves. The Alarm is a crescent-shaped cylinder, of copper or other metal, from five to twelve inches in diameter at the largest part, tapering to each end like the Winan's steamer or cigar ship. It forms about two-thirds of a circle, the larger part having a liquid in it, and on each end a whistle arranged like the common steam whistle. As the cylinder or bent cigar oscillates, the liquid moves the confined air and whistles in coming out at the small ends.

The contributor, or agent, expects to regulate the sound so as to have one for pilot boats, another for reefs or shoals, and another for larger sailing vessels and steamers.

The smallest apparatus, five inches in diameter, will cost $150; the largest, of twelve inches, $500. The one on exhibition is seven inches, and costs $200, and is the one recommended for sailing vessels of over 300 tons. We are assured that this one can be heard in a calm over two miles, and in ordinary rough weather over one mile.

The Leak Alarm consists simply of two pipes attached to a semicircular reservoir or cylinder in the pump well, leading to the deck, where the whistles are attached. The reservoir is so constructed as to admit water when it comes in beyond a certain depth, and it is then expected to oscillate by the rolling of the vessel, and, forcing the air up, give the alarm on deck.

This is what the agent claims for the Alarms. The Leak Alarm, costing little, may be tried, and if motion can be given sufficient to whistle, it may be very useful. As ships do not often spring aleak in calms, with smooth water, it may work very well. But a simple reservoir with a float and an attachment to rise and fall, in one tube or pipe, will be quite as good, unless the watch sleep sound and neglect to look at the stick.

We apprehend that the effect of great cold, by congealing the spray and mist, will interfere materially with the working of the whistle in places where it cannot be got at. It must also be kept in mind that when a number of vessels, supplied with whistles, approach a shoal, as the Harding Rocks, in a fog, and all whistle continually, or occasionally, it will be somewhat difficult to determine which is the shoal and which the ship or pilot boat. In cold weather the liquid must be spirit, or something that will move freely without congealing. Fishermen and small craft generally will prefer to pay a few dollars for a good fog horn rather than to pay $150 for a whistle. But as the invention is new and may be of great utility when fully proved to work well, we recommend a *Bronze Medal.*

236. E. S. Ritchie. Patent Liquid Compass. Also, a Binnacle to contain the same.

The Binnacle is lighted by two lenticular prisms. One concentrates the light on the "lubber's point;" the other disseminates it over the whole card, and this is regulated by a simple device on the outside of the Binnacle, which is lighted by a portable lamp.

The compass-card, practically floating in a tight box, it follows that the point of the agate, having little weight on it, must be very durable, and the action of the card very sensitive, while, at the same time, the liquid prevents oscillation.

We have seen the most unqualified testimonials from naval officers and others, and an order emanating from the Navy Department to use this compass in preference to all others. The writer has had one on board the steam-ship Meteor for several months. Taking into view the substantial manner in which this Compass and Binnacle are made, and their great value to commerce, we recommend a *Gold Medal.*

2. A. J. Warren, *Medford.* Water Cask.

575. Edward Vallely. Water and Harness Casks, made by J. P. Ober.

675. J. E. Warner, *Boston.* Two hundred gallon Cask.

676. E. W. Goddard. Cask.

677. Edward Vallely. Harness Cask.

867. S. H. Litchfield. Patent Bung. These are all well-made, creditable articles in their line. We prefer the Harness Cask without hinges. We do not see the value of the Patent Bung for use of vessels, and for liquor casks we think the effect of the iron on the inside will be injurious.

Ship-Steerers, Windlasses and Capstans.

84. W. P. Hunt, *Boston.* Reed's Steerer. This is a quick, strong, effective, and well-known machine, in extensive use. The band on the rudder-head is made to set up and is an improvement on machines before exhibited. *Diploma.*

225. A Ship's Steerer Model. A mere toy, by which we cannot judge of the merits of a full-sized, well-proportioned machine.

248. Nathan Richardson, *Gloucester*. Steering Apparatus. We would recommend this for fishing vessels and other small craft, as it occupies little space and the wheel stands where it is placed.

611. W. J. Stetson. Elastic Compensating Steerer. This machine requires about six and a half turns from hard up to hard down, which is slow. It has, in other respects, considerable merit, and is well recommended by Captain J. S. Crosby, who has used it, and by J. W. Griffith, naval constructor. The principal objection is that the iron cap which goes over the rudder-head, and to which the machinery is attached, renders it difficult to tighten up when the wood shrinks. We think very well of the principle. A model was exhibited in your ninth Fair and met with commendation. *Diploma.*

863. Daniel Jones, *Boston*. Patent Steerer. Requires only four turns. It may be lifted when the rudder strikes the ground without breaking the machinery. It has a tiller always ready for the relieving tackles. The power appears to be sufficient, the bands on the rudder can always be tightened up, and it can be afforded cheaper than most patent steerers. *Silver Medal.*

862. Henry N. Stone. Capstan and Patent Windlass-Beam. The Capstan can be operated back and forth like a ratchet drill, or in the usual way; it appears to be well made, powerful and free from complication. The Windlass-Beam, known as Edson's patent, appears from the full-sized machine and the illustrated descriptions, to be a well made and very effective article. The power can be easily varied. *Bronze Medal.*

537. B. Merrit, *Boston*. Model of Spring Ship-Windlass. It is worked by a capstan on the forecastle, which can be used separately, and which, by lifting a key, allows the windlass to turn either way. The power is applied to the Windlass by a vertical worm or screw, so attached and contrived as to be elastic through an India rubber base. By these means the surging of the chain will be very little felt on the bars or on the Windlass. The vertical worm operates as a pawl and the motion is continuous. The model is not made in good proportion, but the drawings, on a large scale, exhibit the machine favorably. *Silver Medal.*

626. W. E. Barney, *Boston*. Model of Patent Pump-Break Windlass. The arrangement admits of varying the power. This machine is much like those in general use and is worthy of adoption.

302. C. E. Peirce, *New York*. Model of Steam Propeller Steerer, invented by O. C. Phelps. The agent claims for it the following advan-

tages: The ship needs no rudder, by dispensing with which it attains greater speed. This is done by connecting the main shaft, when it leaves the bearing in stern post, by a ball socket joint, or universal joint, to a short shaft, on which is the hub of the propeller. The after end of this short shaft is arranged to travel on an arc or section of a circle of sixty to eighty degrees, and a power is applied by a wheel on deck, so that the short shaft may be pulled to port or starboard, by which means the vessel's stern is pushed sideways. In the model shown, the chains pass out of the vessel under water, which in practice would be fatal to the steering of the ship.

It is claimed that the ship will steer very easy, turn very short, and that the wheel will stay where you put it. The agent says the plan has been tried on a boat twenty feet long and worked well. We are of opinion that the universal ball joint will be very difficult to make durable, and all the attachments round the stern, which are below water, must be of composition to be durable when applied to coppered vessels. Supposing the universal coupling to be practicable on a large scale, the expense will be an objection, and the object to be attained, quick turning, though very desirable, will hardly make up for the cost.

662. GEORGE COFFIN. Windlass and Steering Apparatus on a small scale. The inventor claims that the windlass being operated by "the toggle-jointed lever" can, with two men, lift a three thousand pound anchor at the rate of two fathoms per minute. Connected with the windlass is a capstan by which Captain Coffin claims to cat and fish the anchor without cat-block and fall, and without fish pendant and tackle, and without a fish davit.

In the steering wheel he claims extraordinary power, quick action, when most wanted, simplicity, non-liability to derangement, gearing nearly all under deck, impossibility of throwing the man over the wheel, and last, not least, great economy.

Your Committee admit that the motion will be quick in the steering wheel, but the models and full-sized wheel are constructed with so little regard to proportion of parts that they are unwilling to express an opinion as to the intrinsic merits of these machines.

318. A. O. CRANE, *Boston*, or *Hoboken, N. Y.* Model of Marine Railway Carriage. The inventor claims to get from three to seven feet more water on the upper keel block, whereby he can haul up vessels of greater draught and can clean the track or cradle, and in constructing new ways can save considerable in the cost.

The principle and details are not sufficiently illustrated by the small model and by the brief description attached, to enable us to give a very intelligent description of this machine. It would seem that the great friction of the plain surfaces of the carriage on the ways, would require a very large power to haul up a large vessel.

291. **New England Pump Company**, C. F. **Mudge**, Superintendent. Ships' Pump. This pump is peculiar in its action; is entirely metallic. The inventor claims simplicity, having only six metallic parts; durability, being submerged, requires no oil; cannot freeze, as no water can remain in the pipes when it is not in motion; great power and cheapness.

Your Committee have seen responsible testimonials from engineers, marine constructors and others, which are very favorable, and although they are not experts in pumps, they award a *Silver Medal.*

770. **Mayo & Tarr.** Paint for vessels' bottoms, by Tarr & Manson. Mr. Tarr says this Paint has been used by vessels out of Gloucester and Boston about three years, that they do not foul, the worms do not get into them, that two coats can be put on the same day, that it dries better under water than out of water, that one gallon, costing $4.50, will cover three hundred and fifty to three hundred and seventy-five square feet for the first coat, and twice as much the second coat.

Mr. Tarr exhibits a plank, partly painted with this Paint and partly with verdigris, which was under water at Gloucester from January, 1864, to June, 1865. Where this Paint was put on it is free from worms; but where painted with verdigris, it is much eaten.

862. **Henry N. Stone**, *Boston.* A variety of Ships' Pumps. Among this lot of Pumps are force pumps of several sizes, a bilge pump, a rotary pump, a ventilator for expelling foul air from ships. Most of these machines are at work by hand-power and appeared to be simple and effective. *Silver Medal.*

899. **George E. Keene**, *Newburyport.* One model of "Self-Feathering Paddle-Wheel." One model illustrating its action in water.

The inventor claims that his floats enter and emerge edgewise from the water and obtain a greater hold than the ordinary wheel. Also, the floats or paddles, being hung in pairs on the ends of the shafts which run through the barrel or hub, and having more surface on one side the shaft than on the other, as in the "equipoise rudder," will do their work effectively in the act of the turning of the shaft. He also claims that there will be a saving of at least thirty-three per cent. over the ordinary fixed float.

Your Committee look upon all descriptions of feathering or movable floats or paddles with considerable doubt, especially for rough work at sea, and among ice. The inventor or agent says he has tried this wheel satis [illegible] on a small boat running from South Boston across the harbor, and Mr. Souther, the owner, speaks well of the wheel in that boat.

One of the models is well made and gives a very good idea of the wheel out of water, and we doubt not that it possesses more or less merit and is worthy of more extensive trial; but, as we are not experts in this description of machinery, we are unwilling to express a decided opinion of its merits when applied to large sea-going vessels.

PHILOSOPHICAL APPARATUS.

JUDGES:

JOSEPH M. WIGHTMAN, JOSIAH P. COOK, Jr.,
JOSEPH B. STEARNS.

202. EDMANDS & HAMBLETT, *Boston.* Electric Magnetic Watch Clock. Telegraphic Electro-Magnetic Plural Time-dial Regulator Clock. Electric Time Dials. Telegraphic Electric Pendulum Gauge for Gas-holders and Reservoirs. Magneto-Electric Alphabetical Telegraph Instruments. The various instruments contributed by this firm exhibit great ingenuity and inventive power in adapting electro-magnetism to practical and useful purposes. The workmanship is neat, substantial and durable, and although they do not claim special merit in the high finish of their instruments, it is, nevertheless, highly creditable to their skill and taste. The utility of the apparatus exhibited by them has been thoroughly tested, and in all cases found to be perfectly adapted to accomplish the object for which it was designed.

The Watch Clock is a most perfect indicator of the fidelity of the watchman, as it records with a pencil on a paper dial in the private office of a factory, or vault of a bank, the fidelity or delinquency of the watchman in charge. Unlike all other contrivances of this kind, the wires may be extended to any part of a building, or group of buildings, and the hour or minute of the visit of the watchman to any particular portion of his route is recorded with accuracy and precision upon the secreted dial. It has already been extensively introduced into factories, public buildings, freight depots and banks, with entire success.

By means of their Electric Clock, correct time may be shown upon simple time dials, in any number of rooms, by these dials being electrically connected with wires to the standard clock; and each dial will indicate the same time as the Regulator Clock, which is the only one that requires care or attention.

The Telegraphic Pendulum Gauge, for gas-holders and reservoirs, measures and *records* with great accuracy the varying heights, depths or quantities of gas or water.

The Alphabetical Telegraph is used without a voltaic battery, and is admirably adapted to connect warehouses or factories with their counting-rooms, several miles apart. The whole apparatus is very portable, and as messages can be sent in the usual letters of the alphabet, no particular skill is required to use it.

The Committee consider all these articles as very useful and ingenious inventions, and worthy of a *Gold Medal.*

263. L. A. SHATTUCK & Co., *Boston.* American Spelter. This is a good article and its increased production in this country is of great importance in the arts.

633. E. J. THOMPSON, *Boston.* Gas Blow-Pipe. This apparatus is very useful, but it is not new nor remarkable for workmanship.

820. ATLANTIC TUBING Co., *Providence, R. I.* Flexible Gas Tubing. This is made of several layers of woven braid around a central coil of wire; between each layer of braid either sheet India rubber or gutta percha is placed so as to render it tight, and it is exceedingly well adapted for conducting gas or air. *Diploma.*

36. G. W. PORTER, Agent, *Boston.* Gas Governor. This is for regulating the pressure of gas as it passes to the burner, which it is proposed to accomplish by means of a flexible diaphragm, and is a good apparatus for the purpose. *Diploma.*

258. JOHN BATCHELDER, *Boston.* Electrotype Plate with Iridium Surface. The design of this is to render the surface of a copper plate, used for engraving, harder and more durable.

760. GILMAN JOSLIN, *Boston.* A pair of Mounted Globes. The manufacturer of these globes has justly received the commendation and awards of the judges at previous exhibitions, and we desire to add our testimony to their continued excellence and thorough workmanship. *Diploma.*

364. B. B. RUSSELL & Co., *Boston.* Thermometers. These thermometers are of very large size, and from their reasonable price they have become popular for certain purposes and locations. *Diploma.*

366. CHARLES WILDER, *Peterborough, N. H.* Woodruff's Barometers and Thermometers. The cistern which contains the mercury of these barometers is of cast-iron, and is so contrived as to allow the instrument to be safely transported from place to place, and always maintain the same height of mercury in the cistern when in use. It is simple, effective and useful. *Bronze Medal.*

877. Alexander Marsh, *Worcester.* Glass Case Barometer. Warmer and Life Preserver. The first is very ornamental. The latter is a tin cylinder with a screw cup to contain hot water, and which when empty may be used as a life preserver.

335. Gale, Snow & Co., *Boston.* Design for showing the angle of sight. For perspective drawings.

494. C. A. Siefert, *Boston.* Barometers, Thermometers and Hydrometers. These are all well made and good instruments in every respect. *Bronze Medal.*

498. A. W. Sprague, *Boston.* Automatic Nitrous Oxide Apparatus. This is an Apparatus adapted for the preparation of nitrous oxide gas for inhalation by persons to prevent pain during dental and other surgical operations. The administration of this gas instead of ether requires great care as to its purity, and this apparatus is well adapted to produce this result and obtain the gas with less trouble and expense than by the usual method. *Diploma.*

788. Stoughton B. Holden, *Woburn.* Night-Watch Alarm. A simple and cheap contrivance. This article is well made and adapted for the purpose for which it is intended.

577. Edson & Lowe, *Boston.* Hydrodick, or Dial of Moisture. This is a simple "Wet-bulb Hygrometer," by the aid of which the dew-point and the amount of moisture is approximately determined, by the simple inspection of the dial; the dial supplying, though imperfectly, the place of the tables generally used.

It is almost as important for the health to regulate the amount of moisture in the atmosphere of our public halls and dwellings, as it is to regulate the temperature, and this invention may serve to introduce the Hygrometer when it would not otherwise be used. While the Committee cannot commend the use of printed dials in the construction of the instruments, and object to the peculiar name by which it is called, they nevertheless think the ingenuity it displays worthy of a

Bronze Medal.

44. Cushing & Mack, *Lowell.* Dry Gasmeter. This is more than usually simple in its construction and arrangement, and it is a good and reliable Meter. *Bronze Medal.*

871. Tufts Brothers, *Boston.* Patent Dry Gasmeter. This is an excellent instrument, of fine workmanship, and combines several improvements of much merit, which render it not only correct and trustworthy, but easy to repair and keep in order. *Silver Medal.*

279. M. G. Farmer & H. Julius Smith, *Boston.* Thermo-Electric Battery. Although it has been known since 1821 that feeble electric currents might be developed by heat, and though this principle has been applied in a most valuable instrument, called the Thermomultiplier, to the measurement of delicate changes of temperature, yet so feeble had been the electric currents thus generated, that until the present year, heat was not regarded as of any value as a source of electricity. A most important discovery recently made by M. S. Marcus, of Vienna, has entirely changed the aspect of Thermo-electricity. By combining with German silver an alloy of zinc and antimony, he succeeded in constructing a Thermo-battery whose power was vastly greater than any which had hitherto been made. Mr. Farmer, starting from the results of Marcus, and carefully studying the electro-motive force and the electrical resistance of the different alloys of antimony and zinc, has more than quadrupled the efficiency of the Thermo-battery as constructed by Marcus, and so greatly increased its power, that it is now comparable with the most powerful means of generating electricity. A battery of forty-eight elements, occupying a space of nine inches square, and heated by a common gas jet, has a power equal to that of two Bunsen's elements, (ordinary size.)

Moreover, an electrical current of a given strength can be maintained by this means more economically than by any method now known, and hence this important invention will eventually revolutionize many of the applications of electricity in the arts, and supersede the cumbersome and expensive acid apparatus now in use for telegraphic and other purposes. The Committee, therefore, consider that the Thermo-Electric Battery exhibited by Mr. Farmer is eminently worthy of a *Gold Medal.*

9. Thomas Hall, *Boston.* Telegraphic and Electro-Magnetic Apparatus. The manufacturer of this fine display of Apparatus has, at former Exhibitions, received the highest awards of the Association, and the articles in the present Exhibition are such as to fully sustain his reputation for useful inventions and excellent work. His recent improvements in the battery and in the construction of his apparatus for medical electricity, and his patent Voltaic Armor Plates, for medical purposes, are specially worthy of commendation for their ingenuity and utility. *Silver Medal.*

603. J. W. Wilcox, *Boston.* Specimen of Electrotype. Excellent work.

1509. Charles Robinson, *Springfield.* Photographicon. This is a small oblong box, with two cylinders about four inches in diameter. A cambric band, four inches wide, and of sufficient length to mount one hundred pictures, is made fast to the cylinders by each end. By turning a small knob in front of the box the pictures appear in pairs or single, under the glasses set in the top of the box. In some respects this is a more desirable form than the album for the retention and exhibition of photographs and other card pictures. *Diploma.*

170. CHARLES WILLIAMS, Jr., *Boston.* Telegraphic Instruments. These Instruments consist of Morse's form of register and signal keys. As specimens of workmanship they are very creditable. *Diploma.*

193. AUGUSTUS L. HUDSON, *Hingham, Mass.* Photographic Sensitizing and Developing Apparatus. The object of this Apparatus is to obviate the necessity of a dark room or tent in making photographic views from nature. The apparatus is very portable and its operation nearly automatic, ingenious mechanical contrivances, very simple and effective, performing all the immersing and washing processes required to prepare the glass plate to receive the picture, entirely excluded from the light, and more perfectly than by any hand process. It is a very valuable if not indispensable apparatus to both amateur and professional photographers when making views in the field or open air.

Bronze Medal.

SODA APPARATUS.

Of late years there has been a very great improvement in the beauty and convenient arrangement of the apparatus for cooling and drawing of soda water. The elegant marble fountains in this Exhibition, and the excellent workmanship of the metal portions, display a highly commendable degree of taste and skill.

294. G. D. DOWS, *Boston.* Ice Cream Soda Apparatus. The peculiarity of this Apparatus consists in placing the cans for the various syrups within a marble case or box from which it may be drawn by corks, and by an ingenious mechanical contrivance shaving a quantity of ice from a block into the tumbler, and thus cooling the beverage by directly mixing it with the ice. By removing the ice-shaving apparatus, the usual coolers and ice may be used. Mr. Dows appears to be not only the inventor of this method of preparing the ice, but also of inclosing the syrups in cans within the beautiful marble case, the form of which has proved so desirable and popular as to be generally adopted by other manufacturers. The Draft-cock is also a decided improvement. For the originality and value of this Apparatus, the judges award a *Silver Medal.*

15. ANDREW J. MORSE & SON, *Boston.* Improved Soda Water Apparatus. Improved Generator for making Soda Water. Copper Soda Fountains. The Apparatus for drawing Soda Water, as constructed by these, and other contributors, are in general form and

arrangement similar to No. 294. They all, however, have special methods of retaining, replenishing, cooling and delivering the syrups and soda water, of the exact comparative merits of which we cannot determine. But we regard each as having certain peculiar merits, and all as eminently successful in furnishing a beautiful, convenient and admirably manufactured Apparatus for the purpose. The Gas Generators and other copper work are highly creditable. These remarks apply to all the contributors of these articles. *Bronze Medal.*

376. James W. Tufts, *Medford, Mass.* Arctic Soda Apparatus. Gas Generator. *Bronze Medal.*

657. A. D. Puffer, *Boston.* Soda Generator, Marble Soda Water Apparatus, Reversible Current Cooler and Soda Fountain. *Bronze Medal.*

PORTABLE GAS APPARATUS.

These valuable Portable Gas Machines, in which the vapor of volatile hydro-carbons is mixed with air and burned in the usual gas burners, have recently been largely introduced, with improvements which have been made in the quality, safety and convenience of using them. They are peculiarly adapted to houses and other buildings in locations where the ordinary gas cannot be obtained from public works. In domestic convenience, therefore, if not in economy, this apparatus has become a very desirable addition to residences in the rural districts.

43. Automatic Gas Machine Co., *Boston.* Gas Machine. This Machine is constructed with a revolving pump to supply the air, like what is called a "wet meter," which is operated by means of a weight and geared wheels. Upon the same shaft, and revolving with it, are two circular disks of metal, pierced with numerous holes, and separated as far apart upon the shaft as the size of the Machine will permit; through these holes cotton wicking is passed to and fro, so as to form a kind of cylinder of wicking. The lower part of this is always immersed in the "gasoline," and as it revolves the saturated wicking is exposed to the air as it is forced into the Machine, and the gasoline is thus vaporized, mixed with the air, and passes off from the Machine as illuminating gas. The light from this Machine in Section 5 was clear, steady, and more brilliant than that from the ordinary gas.

This Machine, in its construction, is the original of its class, and the inventor deserves great credit for his persistence, energy and ingenuity in rendering his Machine simple, safe and efficient, and with his recent improvements in dispensing with water, it is exceedingly well adapted ›r illuminating purposes. *Silver Medal.*

672. LEVI STEVENS, *Boston.* Empire State Gas Machine. The principal difference in this Machine consists in elevating the gasoline by means of an endless belt, with buckets attached, which by their revolution, elevate and discharge the gasoline upon a web or network of cotton wicking. The air, passing through this wicking, produces the same effect as in the preceding machine. The "wet meter" is the means used to supply the air. *Bronze Medal.*

792. JOSIAH F. LEACH, Agent, *Boston.* Union Gas Generating Machine. The general construction of the pump and evaporator in this Machine is similar to those used in No. 43. They differ somewhat in form, but the difference is not an essential improvement. The gas, however, is received and contained in a larger gas-holder, with a water tank, and the pressure of the gas at the burner is regulated by means of a kind of "throttle valve" in the air-pipe, which is acted upon by the rise and fall of the gas-holder. *Diploma.*

CHARLES E. DUNHAM, Treasurer, *Boston.* American Gas Machine. In this Machine simplicity of arrangement and construction are peculiar characteristics. The form is that of an upright cylinder of sheet copper, into which the air is forced by means of an apparatus known as a "dry gasmeter." Near the top of this cylinder and passing through its diameter is a shaft and drum over which passes an endless canvas belt with numerous tin buckets, which, by means of a pulley and cord attached to the pump gearing, is made to revolve, dip into the gasoline at the bottom and, by the peculiar form of the buckets, the gasoline is raised and made to fall like a shower through the air as it rises from the air-pump and passes through the cylinder to the gas-holder and regulator on the top of the Machine.

The Machine is simple in construction and not liable to get out of order, and as no water is required or used in its operation it may be safely placed in locations where those in which water is used would be rendered useless from freezing. *Bronze Medal.*

MICROSCOPICAL APPARATUS.

High microscopy has become, within the last few years, such a complete speciality that the Committee did not consider themselves competent to pass judgment on the absolute merits of the different microscopic objectives exhibited as compared with those of the best makers. They therefore feel themselves greatly indebted to the eminent microscopist, Dr. O. W. Holmes, for a careful examination of these instruments and a comparison of the objectives with the best microscopes now in use, and his report they have made the basis of their own. They would premise that all the objectives exhibited are excellent instruments and do great credit to their makers, but as none of them were manifestly superior to those of the best American and English makers of equal power, and as all the powers exhibited were comparatively low, not requiring the highest order of skill in their construction, they do not deem them worthy of the higher premiums.

424. Joseph Lentmeyer, *Philadelphia, by* Charles Stodder, Agent, *Boston.* Hospital Microscope. Stand, seventeen inches high with carved arm, flat and concave mirrors, diaphragms, camera lucida, bull's eye, stage micrometer and three eye-pieces.

Dr. Holmes reports: "This stand shows the excellent workmanship for which Mr. Lentmeyer is noted. Its principal novelties are, first, the stage, and secondly the removable diaphragm, (if this be a novelty.) The stage is of glass, therefore easily kept clean, but liable to fracture. It moves on two pairs of railway bars, against which it is pressed by a spring. The motion is smooth, but it requires both hands. The rack and pinion work very smoothly." The Committee regret that Mr. Lentmeyer did not exhibit one of his magnificent first-class microscope stands, which would have been worthy of one of the highest awards.

Objective, $\frac{4}{10}$.

Of this objective, Dr. Holmes reports in regard to its action with various test objects, as follows:—

"Podura.—About equal to Spencer's $\frac{1}{2}$. Not as good as Ross's $\frac{4}{10}$.

"Blood Corpuscles.—Not so good as Ross.

"Pleurosigma Angulatem.—Resolves it with high eye-piece. Both Spencer and Ross failed.

"Nobat's lines.—Resolves, 10. Spencer resolves the same. Ross resolves, 9." *Diploma.*

714. W. Wales & Co., *Fort Lee, New Jersey, by* Charles Stodder, Agent, *Boston.* Objective, $\frac{1}{5}$. Approximate angle, 140 degrees, corrected for oblique light. Another posterior lens corrected for central light can be adapted to the same instrument.

In regard to this Dr. Holmes reports: "*Pleurosigma angulatem*, perfectly resolved into dots with good color and illumination. Smith and Beck's $\frac{1}{5}$ resolves the same into lines with some chromatic tinge. Spencer's $\frac{1}{4}$ resolves the same test, but with some chromatic tinge. Blood corpuscles. Smith and Beck's $\frac{1}{5}$ better than Wales, both with direct and with oblique light. Spencer better than either with oblique light.

Diploma.

303. R. B. Tolles, *Canastota, N. J., by* Charles Stodder, Agent, *Boston.* Improved Telescope. One and a half in aperture, four and a half in focus, binocular eye-piece, fifteen diameters. The first ever made.

This is an admirable instrument. The only objection is its high cost, one hundred dollars. Two achromatic triplets, pocket magnifiers.

These excellent working lenses are highly valued by all naturalists who have used them. They have great depth of focus, a very wide field, and clear definition to its very borders.

Dissecting instrument with variable power, equal to one-fifth with clear working distance of fourteen one-hundredths.

The remarkable point about this instrument is its great working distance.

Objective, one-twelfth. Angle aperture, 170 degrees.

Dr. Holmes reports as follows:—

"Compared it with Spencer's, one-twelfth. Working distance more than Spencer's. Shows objects about as well as Spencer's with direct light. Not so well with oblique light."

Objective, with two front combinations, one of one-fifth inch of 165 degrees, one of one-tenth inch, 175 degrees. Dr. Holmes reports: "I had no glass proper to compare this with, but it worked excellently well. Resolved some of the arnica tests."

For this whole collection of apparatus, but especially for the binocular eye-piece and the hand magnifier, the Committee would recommend a *Silver Medal.*

SURGICAL INSTRUMENTS.

JUDGES:

S. CABOT,	GEORGE DERBY,
E. G. TUCKER,	SAMUEL A. GREEN.

Your Committee on Surgical Instruments held their first meeting at the rooms of the Fair on Monday, Sept. 25th, at 10, A. M. Present: Doctors Tucker, Green and Cabot. Dr. Cabot was appointed Chairman. They held a second meeting on Tuesday, Oct. 3d, at 5.30, P. M. Present: Doctors Derby, Tucker, Green and Cabot. The different members of the Committee had, since the previous meeting, at various times, carefully inspected the articles committed to them for examination and judgment. Since then, various exhibitors have presented themselves at the office of the Chairman of the Committee, and have had full opportunity to demonstrate the merits which they claimed for their articles. On the subject of Dental work and instruments, your Committee having a colleague so very competent as Dr. E. G. Tucker, have left that whole matter to him, and for that part of the report he is alone responsible.

The impression which your Committee have received from this Exhibition is that the show of Surgical Instruments and Appliances has been, on the whole, very meagre, with but little competition, though they have been happy to notice some valuable improvements.

Taking the articles in the order in which they stand on the catalogue furnished to the Committee, we have—

546. M. S. Burr & Co., *Boston.* Case of Nursing Bottles. This form of Nursing Bottle has been in use for several years, and approves itself as an excellent article. Its merits are its simplicity. It is easily kept in order. It has a flexible tube, weighted at the inner end with a short piece of glass tube, so that, on which ever side the bottle is held, the end of the tube is submerged in the liquid and does not suck air until the bottle is emptied. It, moreover, has a small ring of rubber at the end of the glass tube which prevents rattling, and diminishes the danger of breakage. *Diploma.*

59. Case of Dentistry. Very good.

178. Samuel S. White, *Boston.* Case of Porcelain Teeth, comprising artificial teeth of American manufacture. Utensils connected with the dental profession. These are of the very best quality and workmanship. *Diploma.*

201. Case of Trusses. This is a new form of Truss made by J. & H. H. Jordan. This instrument was examined, both by itself and as applied to patients, and so far as the evidence submitted to your Committee goes, it does not fulfil what is claimed for it. Still your Committee think that it has some merit, and that it may be of service in some peculiar complication of hernia, with other troubles.

216. Dental and Aluminum Work. Very fair workmanship, but the material not as yet tested by the profession.

230. J. Whittemore, *South Reading, Mass.* Crutches. This form of Crutch has been in use for several years, and is considered by your Committee as superior to any other with which they are acquainted; first, for the manner in which elasticity is obtained for the support of the axilla, without so much of the usual danger of partially strangulating the axillary vessels and nerves; second, for the elastic pad at the lower end of the Crutch, which diminishes the shocks and guards against slipping; thirdly, for the ingenious method whereby a very strong joint is formed at the centre of the Crutch, allowing it to be carried in a trunk or carriage box, and when put together as firm as if of one piece. *Diploma.*

HALING INSTRUMENT. Very good, but not of much use.

589. American Artificial Limb Co. Case Artificial Legs. Palmer's Legs. Your Committee regret that no one competed, and that the field was left uncontested to the Palmer Leg, But, so far as possible, where only one party is represented by those interested to advocate its claims, they believe that they have examined into the whole subject with thoroughness. They have examined the Leg in detail, in reference to claimed improvements.* They saw several recently fitted, in use, weighed them in comparison with the old form of Palmer Leg, and with the Salem Leg, and, after thorough examination, they find that the Palmer Leg is now made about one-fourth lighter than formerly, and, we believe, lighter than any other known Artificial Leg; that the mechanism is more simple and less liable to get out of order than formerly, and, in short, that the Leg as at present made is a decided improvement upon the old form.

Silver Medal.

590. Marvin Lincoln, *Boston.* Case of Artificial Arms. Your Committee have examined Lincoln's Artificial Arm with the greatest care. Three patients wearing this Arm were examined. The first, a very intelligent farmer, who had lost a right arm above the elbow, and had worn a Lincoln's Artificial Arm for two years; can now plough, drive, mow, and do all the ordinary work of a farm with it; he could not use it with any advantage in feeding himself, except sometimes to hold food while cutting it; he says that he would not part with the Arm on any account; says that the Arm is never out of order. A second patient was a soldier, now working at a blacksmith's shop; lost a left arm below the elbow over a year ago; carries iron to furnaces; tends furnace doors, &c.; can lift as much as with his own hand before losing it; the stump is never sore or painful since he has worn the Lincoln Arm, as it often was when wearing the arm of another maker. Another patient, also a soldier, had lost left arm above elbow; is employed as bell-ringer at Charlestown Navy Yard; has not done any hard labor with it, but values the Arm very highly.

The construction of this Arm is simple, strong and effective, not difficult to manage, and not liable to break or get out of order.

Silver Medal.

809. Model of a Practical Case of Artificial Palate. The patient was examined by the Chairman, who failed to discover anything either new or very valuable in the Artificial Palate. The principle has been employed and made public in the London Lancet, July 5th, 1845, by Dr. C. H. Stearns, of this State, and the materials employed were essentially the same, while the adaptation of the instrument to its purpose was much superior to this.

823. **Vinduzer & Massey**, *Philadelphia.* Case of Artificial Teeth. Very excellent, and far superior to those of any other competitor in mechanical nicety of finish. *Diploma.*

BOOTS, SHOES, LEATHER, &c.

JUDGES:

Theodore H. Bell, J. A. Woolson,
George Dennie, J. C. Lindsley,
T. E. Mosely.

It is to be regretted that the display of goods in this, one of the largest and most important branches of the industrial interests of Massachusetts should have been so meagre. It can only be accounted for in the fact that the manufacturers are so overcrowded with orders, no time could be given to prepare, much less spare, any goods for this interesting Exhibition.

The few goods on exhibition are to be commended for the excellence of their style, fitting, finish and work.

1363. **F. M. Blodgett & Co.**, *Boston.* Gents' Over Gaiters. Ladies', Misses' and Children's Anklets. Very good and very well made articles. *Diploma.*

878. **John Watson**, *Halifax, Mass.* One pair of hand-sewed Boots. A good article.

162. **South Shore Boot and Shoe Co.**, *New Bedford.* Ladies' Congress and Balmoral Boots. Good style, fitting and work. *Diploma.*

326. **Guy Lamkin**, *Boston.* Ladies' and Gents' Boots and Shoes. Well made and finished articles.

771. **Goldthwait, Brackett & Co.**, *Boston.* Men's Heavy and Light Boots and Shoes. Very thorough, well made and well finished goods. *Diploma.*

93. **John F. Pray & Son**, *Boston.* Gents' Boots and Shoes. Excellent work, fitting and finish. *Bronze Medal.*

105. **Edwin Chesterman**, *Roxbury.* Five pairs Rubber Shoes. A good article.

649. **Ellery Peabody**, *Boston.* Ladies' and Children's Boots and Shoes. Neat, well made and well finished articles.

687. **Slocum & Pitcher**, *Pawtucket, R. I.* Fancy and Heavy Boots. Very good and well made articles. *Diploma.*

407. F. S. Merritt, *Boston.* Patent Split Leather. Very good stock. Boot Splits curried from Slaughter Leather. Good stock and well finished. Pebble Grain Leather, imitation of Pebbled Calf Skins, and Buff Grain Leather imitation of French Calf Skins. Excellent imitations and superior stock. *Diplomas.*

Patent Shoe Tip Leather. This stock is very firm, yet very pliable; has a beautiful soft finish, even to the skirts. *Silver Medal.*

775. Stephen Hinckley & Co., *Gorham, Me.* Belt Leather and Calf Roll Skins. Very superior stock. *Bronze Medal.*

726. John Bacon & Co., *Boston.* Patent Calf Skins. Very fair stock.

784. William Muller, *Boston.* Calf Skins, tanned and curried. A prime article. *Diploma.*

592. Moses W. Page, *Franklin, N. H.* Belt Lacing. Very strong and excellent article. *Diploma.*

32. T. B. Chapman, *Boston.* Heel and Toe Irons. A fair article.

930. D. J. Browne, *Boston.* Patent Calf Skin. Excellent stock and finish. The manufacturers claim that they have discovered a process of enamelling Calf Skin, so that they warrant it not to crack in cold weather. If such is the fact, it is a very important discovery—one to which all who use Patent Leather in any form have been looking, almost without hope. Your Judges have had no opportunity to test the fact, for the want of one of those cold, frosty mornings which is so fatal to the enamelled surface, when exposed to it; they therefore decline to give any opinion on this important point, but for the excellence of stock and finish, they award a *Diploma.*

290. Martin & Sweetland, *Boston.* Shoe Manufacturers' Goods. Very good articles.

497. Albert A. Pope, Agent, *Boston.* Heel Taps. Superior article. *Diploma.*

523. George W. Hastings, *Grafton.* Black Ball. A good article.

566. Freeman Hatch, *Boston.* Conkling's Water-Proof Sole Leather for Boots and Shoes. *Diploma.*

692. W. B. White, *Boston.* Shoe Buckles. A good article.

49. H. Cook, *Boston.* Leather Cement. Good and useful article.

750. J. B. Lincoln, *Boston.* Cement for Patches. Good and useful article.

CARRIAGES, HARNESSES, TRUNKS AND HOSE.

JUDGES:

JOHN S. DAMRELL,	E. A. G. ROULSTONE,
BENJAMIN P. CHENEY,	FRANCIS E. FAXON.

The Judges have examined the various articles submitted for their inspection, and make the following Report:—

1186. THREE CHILDREN'S CARRIAGES. Good serviceable articles fairly made.

379. JOHN CLARK. Linen Engine Hose. A very superior article of the kind. *Diploma.*

393. JOSEPH COGAN. Case of Saddlery. Consisting of Leather Saddle Pads, and Bridle Fronts. Very neatly made and good stock.

402. PATENT TRUNK. An ingenious invention.

600. TRUNKS, VALISES, AND BAGS. A good show of useful and well-made articles.

655. CHILDREN'S CARRIAGES. Good articles and well made.

650. IMPROVED STIRRUPS. An ingenious article.

699. SHELTON & CHEEVER. Engine Hose. Whip Lashes. Trunks. Elastic Bits. Fire Buckets. Union Curb Bits. The Engine Hose is very superior in stock and workmanship. *Bronze Medal.*
The Whip Lashes best quality.
Two Trunks. A fair article.
Elastic Bits. Very good.
Fire Buckets. Work good, stock ordinary.
Union Curb Bits. Useful invention.
The contribution as a whole, is worthy of commendation.

14. J. WETHERBEE. A Hand Carriage. A very useful article.

235. A FIRE COUPLING. Ingenious, but of questionable utility.

257. PERAMBULATING CHILDREN'S SLEIGH. Nice article for children.

261. EDWARD RIDDLE. A Clarence Coach. Fine design and good workmanship. *Diploma.*

276. CHAUNCEY THOMAS. A Phaeton. Beautiful design and first quality work. *Bronze Medal.*

284. JAMES HALL & SON. Open Box Wagon. Sleigh. Both of very superior workmanship and design. *Silver Medal.*

301. SHIFTING TOP BUGGY. Neat, well-made and convenient.

305. NEAT, KEARNEY & CO. Trunks, Valises, and Bags. A very fine display. *Diploma.*

345. AN IMPROVEMENT ON CHAISE, TIP-CART AND WAGON. There is much ingenuity displayed here, which is worthy of commendation.

348. PLIMPTON IRON AND STEEL MANUFACTURING CO. Carriage Springs and Axles. Beautiful finish and work. *Bronze Medal.*

410. JAMES J. REED. Harness and Horse Clothing. Fine finish, and excellent display. *Diploma.*

503. A WAGON JACK. A valuable invention.

573. SPRING CATCH BUTTON. Of great apparent utility.

685. BRIDLE BIT AND BELT CONNECTION. Very good and useful invention.

711. THILL HOLDERS. A valuable article.

738. SETTING TIRE MACHINE. An ingenious contrivance.

745. JOHN RADDIN. Improved Adjustable Elastic Carriage Wheel. A very ingenious and valuable invention. *Silver Medal.*

752. CARRIAGE PARTS. Shafts, Whiffletree, Perches and Side Springs. Nice specimens of workmanship.

765. COLLARS, COLLAR BLOCKS, HAMES AND SADDLE. Very good, and well-made.

768. PATENT HOSE COUPLING AND LINK SUSPENSION. A solid article.

288. BREECHING AND TRACE CONNECTION. A valuable invention.

837. BRIDLE HALTERS. Very good article.

148. EDWIN BROWN. Trace Fastener and Hold-back Combined. A valuable invention. *Diploma.*

892. TWO CHILDREN'S SLEDS. A very useful invention.

902. ROPE AND LEATHER FASTENINGS. Worthy of attention.

667. JAMES TAYLOR & CO. Double Harness in Case. Patent Cruppers. The double harness is an elaborately finished job of good style and finish. *Diploma.*

The Patent Crupper, in the opinion of the Committee, is of very questionable utility.

788. COMBINED VALISE AND SEAT. Convenient for travellers.

HOUSEHOLD ARTICLES.

JUDGES:

MARTIN L. BRADFORD, SELDON CROCKETT,
NATHANIEL C. STEARNS.

The articles exhibited in this class are very much more numerous than at the last Exhibition, and the Committee are happy to say that most of them are of real utility, though, as always, there are some where a great deal of ingenuity is wasted in contriving machinery to do what nobody wants done, and others where the amount of inventive talent and expense incurred are ludicrously out of proportion to the result accomplished.

The numerous new applications of inventive genius to lighten the labors of the household, are a gratifying indication of a true advance in domestic comfort.

In making the awards, with a due regard to efficiency and excellence of workmanship, we have always, other things being equal, given the preference to the less costly article.

In some cases articles of real merit have been passed without premium because they had received awards at previous Exhibitions, and your Committee have supposed that it was not the policy of the Association to repeat premiums for the same article, unless there are substantial improvements in it.

On the other hand, new contrivances, which promised to be of ultimate value, though now imperfect in construction, are awarded premiums which may appear to be beyond their intrinsic excellence, for the purpose of encouraging the class of originators which is always less in number than those who can improve upon an invention after it is conceived by another.

791. BLAISDELL & ATWOOD, *Lynn.* Improved Patent Carpet Fastener. A wood moulding in which the edge of the carpet is inserted, giving a neat finish and forms a guard to prevent the furniture touching the mopboard.

347. BENJAMIN BRAY & CO., *Boston.* Patent Curtain Fixture. A coiled spring inclosed in the roller, and with several important improvements since the last Exhibition, when it received a Bronze Medal. Works with remarkable smoothness, and remains stationary wherever desired. *Diploma.*

1018. EDWARD L. GILMAN & CO., *North Somerville.* Pickles, Ketchup, &c. Chemical analysis, shown the Committee, proves them free from vitriol, copper or any deleterious ingredients, vinegar prepared in a peculiar manner, retaining their fresh appearance. Superior in quality and handsomely put up. *Bronze Medal.*

855. P. C. Rowe, *Boston.* Patent Window Washer. A brush and tube which screws to the hand-hose, and through which water may be thrown when desired. Very good.

77. B. F. Hebard, 149 *Broad Street, Boston.* Improved Fluid Lamps and Tubes, round and flat, disconnected by zinc, which, being a non-conductor, does not heat the fluid. *Diploma.*

146. E. R. Clark, *Sharon.* Clark's Standard Articles present a great variety of preparations, neatly put up. Cordials, medicines, cooking preparations, flavoring extracts, polishing powder, hair dressing, &c. A very comprehensive assortment, and attractive in appearance.

343. Josiah Webb & Co., *Milton.* Successors of the old firm of Webb & Twombly. Manufactory established twenty-five years since. Chocolate, Cocoa, Broma, Chocolate Confections, &c. Found to be very excellent quality, and entitled to rank among the best. *Bronze Medal.*

731. W. F. Manning, *Charlestown.* "Oonoscope," or Egg Tester. By means of a mirror the light is made to strike through the eggs, distinguishing immediately the bad from the good. *Diploma.*

723. D. H. Goodell, *Antrim, N. H.* Apple Parer. By means of a lever and ratchet on a half circle, pares the apple at one sweep. *Diploma.*

772. A. Ellison, *Boston.* Smoothing Iron. Handle being made to remove while heating.

602. Cambell & Smith, *Middletown, Conn.* Pocket Lantern. Ingenious, folding up very compact. An invaluable article for travellers. *Bronze Medal.*

606. Emory & Hutchinson, *Boston.* The Gilbert Coal Sifter, combining economy and efficiency. The Committee regard it as one of the best offered for their consideration. *Diploma.*

608. L. A. Plumb, *Boston.* Calo Coffee Pot. A coffee-pot with tube through the centre, forming a chimney. May be used with any kerosene lamp, and heats very rapidly.

718. R. C. Nichols, *Roxbury.* Patent Coal Sifter. Possesses a good feature in the movable pan, and is unusually free from dust. *Diploma.*

719. J. P. Bowker, *Boston.* Blake's Patent Bread and Vegetable Slicer. By a rotary knife, which gives a sweeping motion, cutting the

bread of equal thickness, sliding it forward at each turn. Would be excellent for slicing bread for sandwiches. *Bronze Medal.*

4. Henry W. Sargent, Jr., *Lowell.* Clothes Pins. New and useful improvement, strong, simple and durable, clasping the line so firmly that it cannot slip off, and without injury to the clothes. *Diploma.*

5. Henry W. Sargent, Jr., *Lowell.* Flour Sifter. Useful and simple. Does not scatter the flour, and will sift into a very small dish.

16. George W. Wheeler & Co., *Boston.* Cram's Patent Washing, Wringing and Soaping Machine, combined with an ingenious contrivance of applying the soap, which does not come in contact with the hands, and the use of rubber rollers in washing, which would wear the clothes less than most other machines. We recommend a *Diploma.*

24. R. W. George, *Boston.* Washing Machine and do. for Power. One of the best offered; well adapted for family use. The Power Machine is admirably adapted to laundry and manufacturing purposes. *Bronze Medal.*

27. J. H. Stedman, *Boston.* Patent Clothes Wringer. The lever attachment furnishes a ready means of varying the pressure.

42. Gilman Moulton, Agent for Justin Janes, *Boston.* Eureka Clothes Wringer. Combination of a steel spring with the rubber rollers renders it self-adjusting. Its simplicity recommends it. *Diploma.*

42. Gilman Moulton. Dr. Colburn's Patent Evaporator for Stoves or Registers. Very excellent for purpose intended. *Diploma.*

52. Howard Tilden, *Boston.* Flour and Sauce Sifter. Sifts flour rapidly, and also excellent for apple sauce, &c. *Diploma.*

57. L. Russell, Superintendent Idiotic School, *South Boston.* One bundle Brooms. These well made Brooms, the work of the inmates, evince the success of that admirable institution. *Diploma.*

61. A. E. & J. B. Blood, *Lynn.* Blood's Patent Flour Sifter. Simple and effective, and being the pioneer of these useful domestic implements, deserving of a *Bronze Medal.*

47. J. L. Alexander, *Belmont,* Agent for George S. Greenleaf, *Springfield.* Patent Carpet Stretcher. An excellent article for hotel and family use. *Diploma.*

137. James H. Lee, *Charlestown.* "Turkish Coffee Pot." By an ingenious and perfectly safe arrangement, boiling water is forced through a t [illegible] ntre of pot into the ground coffee above, extracting as it

filters all the strength, and preserving all the aroma as thoroughly as any of the foreign elaborate coffee-pots, but in a much simpler way.

Silver Medal.

145. GEORGE H. HOOD, *Boston*, Agent for UNIVERSAL CLOTHES WRINGER. Family size. Laundry size. Hotel size. This machine has been in use about five and a half years, and has attained a world-wide reputation. The clamp which fastens it to the tub admits of immediate alteration to fit either square or round tub equally well. The pressure is regulated by thumb-screws, which allow of any thickness, from the smallest article to the largest blankets or quilts. The cog wheels take the strain and save the friction on the rubber rolls, and in every part the machine is made with regard to strength and durability, rendering it superior as a family wringer, and fully deserving a

Bronze Medal.

The large machines are of the same style, and proportioned to the heavy work required.

403. DANIEL PERRY, *Pawtucket, R. I.* Patent Clothes Dryer. A centre post with four wings, which can be placed in any position. A very neat article, and holds a great many clothes. *Diploma.*

154. H. A. HILDRETH, *Boston.* Wire Steak Broiler. The frame being corrugated, avoids the necessity of the fine bindng wire which so soon burns off, making it more durable and easier to clean. A decided improvement. *Diploma.*

154. ADAMS' COAL SIFTER. Well known and a very good article.

Diploma.

154. BARTLETT'S COAL SIFTER. Favorably known and worthy a

Diploma.

154. HILDRETH FLOUR SIFTER. A Flour Scoop, with rotary sifter at one end. Will answer both purposes, and will be appreciated by all housekeepers.

195. N. B. GOODNOW & CO., *Boston.* Pastry Knife and Fork and Pie Crimper.

204. CLARK & MOORE, *Boston, by* CORLEW & STICKEY, Agents. Locke's Union Flour Sifter. *Diploma.*

206. RUSSELL & PHELPS, *Boston.* Bartlett's Polar Refrigerator, with Filter and Water Cooler combined. *Diploma.*

217. WILLIAM LINCOLN & CO., *Boston.* R. S. Merrill's Patent Fluid Burner. Gives a good light for a reading lamp.

233. GEORGE NEILSON, *Boston.* Kerosene Burners. An unusually clear and fulsome light. An improvement in connecting the oxygen with the flame. *Diploma.*

239. **Person Noyes**, *Boston*, Agent for **Symonds' Patent Fluid Burners, Gas Burners, Lanterns.** A double tube, with disconnector of wood, which prevents the fluid from heating; and Noyes' Patent Circular Wick, which, being porous through the centre, allows the escape of gas into the flame. The wick being adjusted by a thumb-screw and burning without a chimney, makes it superior for a hand-lamp.
Bronze Medal.

C. R. Bradford & Co. Window Curtains. *Diploma.*

249. **David W. Low**, *Gloucester.* Richardson's Ice Crusher. Very powerful. Suited to the use of ice cream saloons, hotels, fishing vessels and packers. *Bronze Medal.*

412. **Monroe Brothers**, *Fitchburg.* Rotary Egg Beaters. These machines received a Bronze Medal at the last Exhibition, and are still unexcelled for many family purposes. The Mammoth Rotary Egg Beater is intended for larger purposes, and adapted for confectioners, hotels, beating eggs or cake batter, or for mixing paints.

269. **Henry F. Bond**, *Waltham.* Mangle. This machine, in three sizes, adapted to the wants of families, hotels and laundries, for smoothing clothes by a roller pressure. An article of economy in the wear of clothes; without danger of scorching; is the most compact and powerful in use, and has a strong list of recommendations from those now using them. *Bronze Medal.*

272. **Sanford Adams**, *Boston.* Iron Ash Safe. Strong, substantial article, and well made.

278. **W. D. Wadman**, *Boston.* Coal Sifters. These are good and well made Sifters, and received a worthy notice at last Fair.

380. **A. H. Grover**, *Boston.* Covered Knife Box, made of wood. Strong and very neatly made.

385. **Eureka Manufacturing Co.**, *Boston.* Self-Stirring Coffee Roaster. An application of mechanism which effectually performs one of the most tedious of cooking operations, roasting evenly, and will meet the approval of every housewife. *Bronze Medal.*

429. **Hayward & Co.**, *Boston.* Specimens of Coffee. Very good.

443. **D. Osborne & Co.**, *Cambridgeport.* Foye's Flour Sifter. A Brush Sifter; works well, and sifts fast.

454. **S. C. Maine**, *Boston.* Coal Screen and Ash Sifter. A cylindrical Sifter, and works very thoroughly. *Diploma.*

455. **William S. B. Maine**, *Boston.* Lamp. Constructed in a novel manner, giving a brilliant flame, which cannot be broken by a

sudden jar. It is particularly adapted to railroad cars, (horse or steam,) omnibus and other vehicles, and worthy of introduction.

Bronze Medal.

455. William S. B. Maine, *Boston.* Independent Flour Sifter. This Sifter has the correct motion for sifting light, without the rubbing process so liable to force the dirt through, which is a fault with many others. *Bronze Medal.*

469. A. L. Cutler & Co., *Boston.* Patent Chimney Cleaners. Very simple and effective.

472. Johonnett & Saunders, *Boston.* Tripoli Soap, Powder and Brick Dust. Still maintain their renowned excellence, for which they received a Diploma at last Exhibition.

504. Lothrop, Niles & Co., *Boston.* Oil Lamp and Burners. Makes an excellent light, and the oil being of a pink color, is quite attractive.

507. W. Sanborn, *Boston.* Self-Heating Sad-iron. Morrill's Patent. Has a lamp which burns alcohol or burning fluid. Is very convenient.

515. H. L. Davidson, *Clinton.* Washing Machine. Simple; works easy and does the work well, and without injury to the clothes. We recommend a *Bronze Medal.*

524. T. W. Brown, *Watertown.* Ash Sifter. Wooden box with sliding Sifter. Works well. *Diploma.*

540. Hollingsworth & Whitney, *Watertown.* Machine Paper Bags, of superior quality.

560. George Coolidge, Agent, *Boston.* Bailey's Spring Roll and Cog Wheel Washing and Wringing Machine, family size, hotel size and power size. This machine, which has been for sale about five years, has become deservedly popular. It wrings equally well from either side by simply changing the water-board; is attached to a wash-bench, but can be altered to fit square or round tubs; is a cog-wheel machine, and for its many good points received a Bronze Medal at last Exhibition. The larger size is just what is needed for hotels, and the Power Machine is rightly named for its great strength and capacity, which admirably adapt it for laundries and manufacturing purposes, and for which we award a

Bronze Medal.

560. George Coolidge, Agent, *Boston.* Cog Wheel Champion Wringer, with a new attachment. Will fit tubs of any size; works and wrings well. *Diploma.*

561. George Coolidge, Jr., *Boston.* Clothes Dryer for window use. For its size contains a large amount of line, and can be easily

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attached to any window; can be filled in the house, and pushed out into place in one minute—a great desideratum in its favor for the winter season, when snows are deep. *Diploma.*

562. GEORGE COOLIDGE, Jr., *Boston.* Gale & Co.'s World's Clothes Dryer. Spreads a large amount of line; can be placed in any yard, in a socket set for the purpose; when filled, can be hoisted out of reach, and when not in use, can be folded up and taken into the house. For its merits it received a Bronze Medal at last Exhibition.

375. GEORGE W. PUTNAM, *Newton, Mass.* Beef Steak Breaker. Sufficient for the toughest steak.

563. GEORGE COOLIDGE, Jr., *Boston.* Fairy Clothes Dryer. A neat, light and substantial article, for inside use; occupies but very little space, or can be hung up with the clothes on, if more convenient; folds into very small compass when not in use; merits which commend it to every nursery. *Diploma.*

574. HORATIO FAIRBANKS, *Boston.* Flour Sifter. *Diploma.*

584. J. H. CRANE, *Charlestown.* Clothes Wringer. Made with three rolls.

585. D. C. COLBY, *Boston.* Flour and Meal Sifter. *Diploma.*

599. F. MONROE, *Fitchburg.* Carpet Whips. Composed of six rattans, confined in a handle for whipping carpets, clothing or furniture.

615. MONROE BROTHERS, *Fitchburg.* Apple Slicer. Entirely new, simple and efficient; attaches easily to any table, and can be worked with great rapidity without waste; needed in every household for slicing apples for sauce, pies or drying. *Diploma.*

Melting Ladles; from their peculiar form pour the melted metal from the bottom, leaving the dross in the Ladle. Particularly adapted for plumbers' use, or casting pistol and rifle balls, &c. *Diploma.*

616. E. TRASK, *Fitchburg.* "Metal Disk" Washing Machine.

664. C. H. STICKNEY & Co., *Waltham.* Patent Union Dust Pan. Contains a socket to hold the dust brush. *Diploma.*

673. J. R. CHAMPLIN, *Laconia, N. H.* Ice Cream Freezer. Of new construction, with crank on the side, and gearing which revolves the freezer and dasher in opposite directions; turns easily, and works with perfection. One of large size now makes the superior cream at one of our most fashionable resorts. *Silver Medal.*

688. F. G. WILLIAMS & Co., *Boston.* Non-Explosive Safety Lamp. A neat little hand-lamp, the vapor burning from absorption. *Diploma.*

689. H. M. HARTSHORN, *Malden.* Carpet Stretcher. Small and useful, but not of sufficient merit to warrant a premium.

735. H. L. MESERVE, *Charlestown.* Hand Washing Roller. Saves the knuckles.

748. W. WELTON, Jr. Bond's Wick Cutter. Trims all flat wicks rounding, preventing smoke and smutty chimneys. *Diploma.*

840. GLOVER & PUTNAM, *Newton Upper Falls.* Coal Sifter. Works very easily. *Diploma.*

1132. F. A. WALKER & Co., *Boston.* Case House Furnishing Goods. A fine display of foreign and domestic manufacture.

906. HARVEY LOCKE, *South Boston.* Machine for seeding Raisins. This little Machine, so unique in construction, can be attached to any table, and does its work with such nice precision, as fast as nimble fingers can turn and feed it, that it cannot fail to meet with welcome in every household. *Silver Medal.*

911. J. A. & G. E. WOODBURY, *East Cambridge.* Patent Bottle Stopper. A good article for bottling soda water, ale or mineral water, or any liquid containing fixed air.

915. A. J. PALMER, *New York.* Patent Dough Kneader. Kneads very thoroughly, quickly, and with very little labor, without putting the hands in the dough, (a recommendation for cleanliness;) firmly attaches to a table by a clamp, is very simple, and must be appreciated by all housekeepers. *Diploma.*

916. C. W. PACKER, *Philadelphia.* Patent Ice Cream Freezer. Running by geared wheels, with crank on the side. This Freezer is very easy to work, its heavy dasher scraping and beating all the time, so thoroughly that no one can fail to make ice cream remarkable for its smoothness and lightness. *Bronze Medal.*

615. MONROE BROTHERS, *Fitchburg.* Apple Parer. New. From its nice construction, adapts the knife to any irregularities or form; will do equally well on pears, and, like all the other inventions from this firm, performs perfectly the work for which it was intended.

Bronze Medal.

505. W. A. CLARK, *Boston.* Boot and Shoe Duster. A combination of scraper with movable brushes; very effective. *Diploma.*

392. JOHN G. PERRY, *Kingston, R. I.* Soap Cutter, for cutting up bars of hard soap. Answers its purpose admirably. *Diploma.*

350. BRIDGMAN & PEABODY, *Boston.* Manilla Clothes Lines. Very smoothly made, and of excellent stock.

351. **James Higgins.** Newly invented Lamps, which, from peculiar construction, will burn inferior oils, even crude petroleum, with scarcely a perceptible smell, and gives a clear and very brilliant light. *Diploma.*

359. **Albert Hallowell**, *Lowell.* Tumbler Washing Machine. An ingenious contrivance, which will commend itself, for hotels, barrooms, soda and beer saloons. Very ornamental, and entitled to a *Bronze Medal.*

298. **Seavey & Co.**, *Boston.* Japanned Ware. Toilet Set, Water Cooler, &c., very neatly japanned.

669. **James Ives**, *Mount Carmel, Conn.* Ives' Patent Lamp. An ingenious method of hanging the chimney and shade, being easily removed while the lamp is trimmed or lighted, by means of chains and pulleys; also using a porcelain shade, which answers as reflector, giving a very soft and agreeable light; the whole very ornamental, being particularly adapted for a hall, hanging or bracket lamp. *Diploma.*

FURNITURE AND UPHOLSTERY.

JUDGES:

James Sharp,	Joseph Buckley,
Charles M. Kimball,	I. H. Sillsby.

1041. **Drummond & Pritchard.** Sideboard. Table and Stand. For this contribution, superior in design—the work (especially the carving,) good—the Committee recommend a *Bronze Medal.*

1188. **Augustus Bauch.** Set Parlor Furniture, made in Willow. The material from which these articles are made, is found of superior quality in New England. The cultivation and seasonable preparation of it should be encouraged. The work of this contribution is unusually good. The Committee recommend a *Bronze Medal.*

1396. **E. H. Brabrook.** Set of Painted Chamber Furniture. Throughout this Suite of Furniture, the ornamental embellishment is very skilfully executed. For so good a specimen of decorative art, the Committee recommend a *Diploma.*

D. Manuel. Patent Spring Bed. *Diploma.*

1469. **John A. Ellis & Co.**, *East Cambridge.* Sideboard, Cabinet and Mantel-pieces. Every article in the contribution is a specimen of tasteful design, and of prime quality of work and stock. Committee recommend a *Silver Medal.*

1132. GEORGE B. CARTWRIGHT. Venetian Blinds. For careful finish and good quality of trimmings, Committee recommend a *Diploma.*

1501. NATHANIEL WITHINGTON. Work Table. The plan of this Table is partly new, and the work and finish in some parts so excellent, the Committee recommend a *Diploma.*

1558. RINN & CO. Cabinet and Candelabra. The Exhibition is indebted to Messrs. Rinn & Co. for this contribution of costly articles. The designs are in the purest taste, the materials of the choicest quality, and the work unsurpassed. Committee recommend a *Silver Medal.*

1613. W. TOUSSAINT & CO. Cabinet, with other Specimens of Carving. The freedom of the designs throughout, and the whole character of the work so good, the Committee recommend a *Bronze Medal.*

187. HIRAM TUCKER & CO. Bronzed Iron Bedstead, Crib and Swing Cradle. For superior qualities in each of these articles, Committee recommend a *Bronze Medal.*

13. J. F. PAUL. Oval Turning and Veneer Cutting. All the work so well done, Committee recommend a *Bronze Medal.*

1573. The contributions of Musical Instruments, found in the Upper Hall, form as usual a very attractive and important feature of the Exhibition, and this Committee have endeavored carefully to examine those qualities in these articles to which their attention was called, namely: the cabinet work, carving, and polishing of Piano-Fortes.

It is needless to say that in this department nothing but good work and careful finish is found; if, however, any preference could be allowed, your Committee found it in the perfect condition of the large and faultless contribution, No. 1573, from Hallet, Davis & Co., and recommend a *Silver Medal.*

1472. W. B. ELLIS & CO. Drapery and other Curtains. For neatness and good taste a *Bronze Medal.*

1535. MASON & HAMLIN. For the very liberal contribution of Cabinet Organs, embracing so great a variety of tasteful designs and such an amount of excellent work and material, the Committee recommend a *Silver Medal.*

CARPETS, RUGS, &c.

JUDGES:

JOHN GOLDTHWAIT, F. B. WENTWORTH,
J. A. FELT.

Your Committee have examined carefully the articles, as per memorandum given them, and report as follows:—

1270. Mrs. J. L. **GILMAN**, *Great Falls, N. H.*, by W. W. **MERRICK**. Rag Rug. This is a finely executed piece of work, and the maker deserves much credit for taste and ingenuity in working up old materials in so tasteful a manner, and your Committee would recommend a *Bronze Medal.*

1366. Mrs. **AUGUSTA BROOKS**, *Medford.* Rag Rug. *Diploma.*

1598. Mrs. H. N. **HASKELL**, *Chelsea.* Rag Rug. *Diploma.*

1517. Mrs. S. E. **DEGRUSHE**, *East Somerville.* Rag Mat. *Diploma.*

These all deserve a favorable notice for taste and skill in arranging rags and fragments of yarn into flowers and figures, making them useful and durable articles of comfort. Would recommend in each case a Diploma.

1254. T. P. **HOWELL & CO.**, *New York*, by **JOHN H. PRAY, SONS & CO.** American Sheep Skin Mats. These goods are very handsomely colored and tastefully got up, and are fully equal to the best English productions. *Diploma.*

Messrs. **PRAY & CO.** Patent Affghan. This is a new article, felted on rubber cloth, handsomely colored, and supposed to be durable and water-proof.

1538. **LOWELL MANUFACTURING COMPANY.** Samples. Two and three-ply Ingrain Carpets. Nothing new in this class of goods. All good patterns and bright colors.

1564. A. **FOLSOM & SON.** Oil Cloth Carpeting. These are excellent goods, good styles and well finished, and are fully equal to any goods of this kind in the market. *Diploma.*

35. G. W. **CHIPMAN & CO.** Carpet Lining and Stair Pads. This is an excellent article for putting under woollen carpets. It is said to be anti-moth, and carpets laid over this will wear longer than if put directly on the floor. *Diploma.*

1346. Mrs. J. O. **CARTER**, *West Cambridge.* Silk Rug. This is made from small pieces of silk and ribbons and is well worthy of imitation by ladies to use up what would ordinarily be thrown away or put into the rag bag to be sold for paper stock. *Diploma.*

The numbers from 1039 to 1600 on our list, Rugs and Mats, are well worth mention. They show an industry and energy among the married ladies that might with profit be imitated largely by both sexes. These goods are all about the same general character.

PAPER HANGINGS.

JUDGES:

Samuel H. Gregory, Allen R. Nye,
Ebenezer H. Hitchings.

The Committee regret that so little interest has been taken by the several manufacturers in regard to the exhibition of their goods.

For a few years past the efforts of our manufacturers have been directed to the production of designs of a higher order and finish, of far greater excellence.

This improvement has been very marked; yet so little interest to exhibit is shown by the manufacturers that but one of them improves the opportunity offered by the Massachusetts Charitable Mechanic Association.

237. J. H. Hazelton & Co., *Boston.* Ten samples of Paper and three samples of Border manufactured by them. In the manufacture of these papers commendable care has been given to the laying of the grounds, the proper shading of the colors, flocking, and metal work, all of which entitle them to high rank among the manufacturers of paper hangings in the country. The Committee unanimously recommend a *Silver Medal.*

706. Nye & Sewall, *Boston.* Eight samples Paper Hangings of good style and finish.

743. Charles E. Wiggin, *Boston.* Sixteen samples from various manufactures of Paper Hangings.

EARTHEN, GLASS AND STONE WARE.

JUDGES:

Abram French, Charles E. Jenkins,
Richard Briggs.

141. Rice, Pierce & Co. Cut Glass Shades, Vases, &c. Some fine specimens, for which we award a *Diploma.*

Union Porcelain Co. Samples of Crockery Ware. *Diploma.*

779. **Page & Harding.** Cylinders, Shades, Window Glass and Colored Window Glass. Improved and very fine specimens.
Bronze Medal.

425. **Tuttle, Gaffield & Co.** Cylinders and Glass Shades. Window Glass. Excellent specimens. *Bronze Medal.*

416. **J. M. Cook.** Stained Window Glass; also, Cut and Embossed do. Improved embossing and cutting. *Bronze Medal.*

308. **Richard Briggs.** Richly decorated China Ware. Improved and superior for American decorations, and entitled to great credit.
Silver Medal.

594. **Samuel West.** Sash Specimen of Stained and Cut Glass.
Bronze Medal.

WATCHES, CLOCKS, SILVER AND PLATED WARE.

JUDGES:

Z. A. Willard,	Charles H. Kennard,
Richard F. Bond,	Henry Guild,
N. C. Poor,	Richard Currier,

John Bigelow.

The Committee, in submitting their Report, would remark that the articles in their department are few in number and of a quality not calling for especial commendation.

31. **Seth Thomas**, *Thomaston, Conn.*, contributed by **G. H. Grueby**, *Boston.* Calendar Clock.

466. **L. F. & W. W. Carter**, *Bristol, Conn.* Two Calendar Strike Clocks.

55. **A. Warner**, *Boston.* Lewis' Perpetual Calendar Clocks. Clocks of this character have been in use for more than three hundred years, but as the art of clock-making progressed towards perfection, all that was superfluous was sacrificed to accuracy, and consequently calendars, as well as a host of similar marvels which had been attached to clock-work, were dropped as worse than superfluous—actually detrimental. The Committee cannot see anything in the reproducing of old, abandoned inventions worthy of favorable notice.

58. **G. M. Stevens & Co.**, *Boston, Mass.* Remontoir Escapement Tower Clock. Improvement in Connection between escapement and running part. This Clock was commented upon and an award made at the last Exhibition, but the Committee understand that the present claim is for the "Improved Connection," which appears to possess, for the purpose intended, considerable merit. *Diploma.*

358. Robbins, Appleton & Co., *for the* American Watch Co., *Waltham, Mass.* Watches, Watch Movements, and Improvements in Watches. The objects presented to the Committee by this Company for consideration are—

1. A number of movements, including a Nickel movement, "exhibited as evidence of the excellence of the finish of their work, made in the ordinary course of their manufacture, and taken indiscriminately from their stock on hand."
2. Watch "submitted for its adjustments as well as general quality."
3. Fogg's Patent Regulating Stud.
4. Stratton's Patent Barrel.
5. Fogg's Patent Screw Centre Pinion.

After a very careful examination of the Movements, including one in pieces, the Committee cannot find any improvement as regards quality over former exhibitions, nor for general excellence anything to commend.

The Watch submitted for its adjustments cannot be reported upon, as there is not time within the limits of the duration of the Exhibition to test it.

Fogg's Patent Regulating Stud is regarded by the Committee as likely to prove a positive detriment to the time-keeping qualities of any watch to which it may be applied.

Stratton's Barrel does not seem to be so good as others now in use.

Fogg's Screw Centre Pinion is looked upon by the Committee as likely to prove a real step in the improvement of Watches.

It must be borne in mind that the American Watch, like the Swiss, is propelled by a mainspring inclosed in a going, *i. e.*, a toothed, barrel, thereby dispensing with the fuzee and chain of the English watch.

This mode of obtaining power, while it saves the expense and trouble of the fuzee and chain, is open to grave objections in its practical application.

First of these objections is in its principle of action, which will always prevent its use in all watches where chronometrical accuracy is desired.

Second, in its capacity for mischief; being in immediate connection with the train, the spring, in breaking, can do great damage to the wheels, pinions, pivots and jewels.

The American Watch requiring, from its construction, a very great motive power, is peculiarly liable to injury by the recoil of the spring in breaking, so much so that, at times, the destruction of the train follows on the breaking of the spring.

Heretofore the only remedy for this difficulty has been in a highly ingenious but complicated arrangement of the barrel, but in the Centre Pinion of Fogg, there seems to be a simple, inexpensive and certain preventative of the evils resulting from the recoil of the spring.

This contrivance may be briefly described as an arbor riveted to the centre-wheel, on which a coarse screw thread is cut; the Pinion is hollow and provided with a corresponding female screw. When screwed together the two parts form a complete Pinion, not noticeably different from an ordinary Pinion.

When the Watch is wound up the force of the mainspring operates to bind the two parts of the Pinion together more closely, *i. e.*, to drive the screw home; but when the mainspring recoils in breaking, the force which would ordinarily be expended in destroying the train is simply diverted to unscrewing the two parts of the Pinion, and thereby preventing all injury to the Watch. The peculiar advantage of this invention seems to be that it may be applied to all Watches having going barrels. *Silver Medal.*

The Executive Committee, impressed by the conviction that the manufacture of watches in this country has been stimulated by the energy and enterprise which have marked the management of the American Watch Company, think it due to the Association which they represent, to put on record a marked approval of the success which has rewarded the efforts of those engaged in the manufacture of the widely known "Waltham watches."

The fact that thousands of these watches of all grades are annually sold; that Americans abroad show with pride this evidence of the mechanical ingenuity of their countrymen; that machinery accomplishes in this country, with unerring accuracy, that which hand labor in the old countries has only been thought capable of performing, combine to create a feeling of satisfaction that a manufactory is located within the limits of this State, which has not only established itself upon a solid foundation, but has settled a question which dispels all doubts in this country of the successful application of machinery in the execution of the minutest parts required to make a perfect watch. The reputation of these watches as correct time-keepers is beyond question; and the Executive Committee therefore, for general excellence of workmanship and steady improvement in manufacture, award to the American Watch Company a *Gold Medal.*

720. CROSBY & MORSE, *Boston.* Case of Diamonds. "Exhibited as specimens of *cutting* done by this firm." The art of cutting and polishing diamonds is almost exclusively practised in Amsterdam, where it has been brought to so great a degree of perfection as, in the opinion of many experts, to defy competition. Even the great business centres of London and Paris, which receive and distribute all, or nearly all, the precious stones of the civilized world, are dependent almost entirely upon the diamond cutters of Amsterdam. Capital, and the experience of generations, has given the Hollanders an exclusive control of this branch of the arts.

Few but practical lapidaries understand the difficulties which stand in the way of the successful manipulation of the diamond.

Mr. Morse, of the above firm, is the first person in America who has attempted the difficult task of cutting diamonds as a business, and from the excellence of the specimens before them the Committee are of the opinion not only that he has successfully mastered the art, but that, as specimens of cutting, the diamonds exhibited will compare favorably with the best work done in Holland.

Mr. Morse has simplified and improved the machinery used by the Hollanders, and in 1862 cut the largest stone ever found in North America, weighing 23½ carats.

For the patience and perseverance with which Mr. Morse has labored, under many discouragements, to introduce a new art to the mechanics of our country, he is entitled to the highest commendation, and the Committee award the highest prize in their gift, a *Gold Medal.*

420. GEORGE P. REED, *Boston.* 1. Combination Chronometer Escapement. 2. Adjustable Regulator. In the Combination Chronometer Escapement offered for examination and award, the contributor claims "by his peculiar application of detents, in combination with the lever motion, to have done away with *all* the objectionable features of the chronometer, rendering it safe and practical for pocket use."

Out of a host of contrivances and inventions for the measurement of time during the past hundred years, two Escapements only seem to have stood the test of practical use—the Chronometer and the Lever. The Chronometer or Locking Escapement, where scientific accuracy is required, either for marine, astronomical or pocket purposes, has never been approached. The Lever or Detached Escapement, for ordinary pocket use, is also without a challenger. The best and most experienced workmen concur in this opinion. No combination of these two Escapements ever has been successful, and it is extremely doubtful if any combination, however ingenious, ever will be.

The points of improvement claimed as original by Mr. Reed in his combination over others similar in principle are, the use of a spring detent, by which the power usually lost in drop is saved for impulse, and the collateral advantages of the use of a lighter mainspring, with the consequent saving of the wear to the train.

After a very careful examination and *re*-examination of this Escapement, the Committee fail to see any advantage in it over the pure Chronometer Escapement, whose imperfections it proposes to remedy.

While giving this opinion the Committee desire to accord full credit to the skill, patience and ingenuity exhibited by the contributor who is well-known to the community as a painstaking and successful watch-manufacturer, and as far as *combinations* go, his arrangement is the best for the purpose, they have ever examined; but they are constrained to say that their careful inquiry into the merits of this combination leaves them with the opinion that the pure Chronometer, (and by that they mean the Chronometer Escapement, made in the highest style of the art by competent workmen,) is still unequalled for accuracy, strength, durability and safety, and its character for such qualities cannot fairly be impeached by any untried invention, however ingenious.

The most satisfactory test of the merits of the two Escapements would be actual trial; but as no result could be attained short of years of experiment, it would be too costly and tedious to be even proposed.

2. Adjustable Regulator. Of but little practical advantage.

MANUFACTURED SILK, COTTON AND FLAX.—LIGHT FABRICS.

JUDGES:

William F. Nichols, Ebenezer M. Watson,
Benjamin T. Stevenson, John O. Waterman,
Henry Norwell.

The Committee on "Manufactured Silk, Cotton, Flax, and Wool, Light Fabrics," have attended to their duty, and would report that they found but a meagre display of goods manufactured of the above materials, which they much regret.

1019. **John Mercer**, *Cornish, N. H.* Box of Woollen Yarn. A very good article.

1049. **Miss Hannah Bennet.** Lady's Cape, made from Milk Weed. Quite a novelty.

1060. **Agawam Woollen Co.** Woollen Socks. Well made.

1094. **Mary E. Thompson**, (aged 73.) Imitation Camel's Hair. Very creditable.

1129. **John Harrington & Co.**, *Boston.* Worsted Goods and Shawls. Good specimens; recommend a *Diploma.*

1142. **American Linen Thread Co.**, *Mechanicsville, New York.* Black Linen Thread. Good article.

1146. **C. M. Moody**, *Northampton.* Worsted Dusters. Novel and useful.

1279. **Mrs. C. Fulton**, (aged 80,) *Hillsborough, Mass.* Linen Towels. A very superior article, and deserving favorable mention; recommend a *Diploma.*

1624. Mrs. G. W. Hall. Mittens. Well made and useful.

1632. Ladies' Social Aid Society, *Wellfleet, Mass.* White Embroidered Toilet Quilt. Handsomely embroidered and well made.

117. Hadley Co., James M. Beebe & Co., Agents. Spool Cotton. The Committee consider this a very important article of American manufacture, and have examined it with great care and consider it fully equal in appearance to any foreign spool cotton, and think it must in time supersede the imported threads; and recommend for superiority in Spool Cotton a *Silver Medal.*

570. Miss Lizzie Ames, *Malden.* American Flags. A creditable piece of work.

1110. Francis B. Lang, *Boston.* Specimens of Cotton. Handsome Specimens.

1116. A. K. Young & Co., *Boston.* Hoop-Skirts. Consider them superior in every respect, and recommend for them a *Diploma.*

1479. H. A. Barstow, *Boston.* Hoop-Skirts. Good article and well made.

1591. J. O. Prince, *Boston.* Hoop-Skirts. Well made article.

1670. Stark Mills, *Manchester.* Linen Crash. Superior article of American Crash, the only one of the kind on exhibition.

1632. Beaman Manufacturing Company. Marseilles Quilts. We think these a very good article; an improvement on American Quilts, and recommend for them a *Silver Medal.*

1178. Contributed by Lawrence & Co. Hosiery from Ipswich Hosiery Mill. Quite a variety of styles, and appear well made.

1178. Cocheco Manufacturing Co. Prints. Credit to the Manufacturer. Only article of the kind on exhibition. *Diploma.*

1534. L. Trouvelot, *Medford, Mass.* Native Silk. A box containing Cocoons and Silk, the product of a native silk-worm, found by Mr. Trouvelot in the woods, some six years ago. Mr. Trouvelot commenced his experiments with a *pair of worms* in-doors, and continued for four years propagating until he had a large stock on hand; and two years since, commenced propagating in the *open air*, and was perfectly successful. The worms are perfectly hardy, living and propagating in the *open air* and feeding on the leaves of trees in our forests; such as oaks, walnuts, birch, chestnut and willow. The manner of propagating, and a full description of his discovery, is found in two letters from Mr. T. which accompany this Report. The silk in the box is reeled from the cocoons by Mr. T., and is in its natural state.

The Committee regret that Mr. T. has not had some of his silk dyed and woven into fabrics; but he has considered it of more importance, up to the present time, to multiply his worms, than to obtain the silk from the cocoons. He has on hand at the present time, from three to four hundred thousand worms.

The Committee consider this a valuable discovery on account of the worms being hardy, requiring so little care and so easily propagated, and finding their food on trees which grow spontaneous all over our continent. They regret, however, that they are not able to report on the quality of the silk compared with the silk from the common silkworm, fed on the mulberry tree. As the only specimen they have seen is the one in the box. Your Committee are of the opinion that valuable results must follow this discovery, and a new field be opened to American industry, and recommend to Mr. Trouvelot for his discovery, his perseverance and the progress he has made, a *Silver Medal.*

MANUFACTURED WOOL.—HEAVY FABRICS.

JUDGES:

EDWARD W. KINSLEY,	THOMAS W. TUTTLE,
NOBLE H. HILL,	JAMES C. CONVERSE,

MOSES W. RICHARDSON.

There is a small display of goods ranging under this head; but the collection of Manufactured Woollens shows that our manufacturers are making great advances every year. The Judges on Manufactured Wool regret that the samples presented should be so limited in number, and would suggest to Manufacturers that it is for their interest to have their goods well represented at these Exhibitions.

1323. LOWELL MANUFACTURING CO., *Lowell, Mass.*, *by* GEORGE C. RICHARDSON & CO., Agents, *Boston.* Alpaca Goods, plain and figured. A new branch of industry in this country. The specimens presented by the Lowell Manufacturing Company are gratifying to your Committee in the highest degree, as indicating an ability on the part of American manufacturers to entirely supplant this class of foreign fabrics. Considering the short time they have been upon this new branch of manufacturing, the Company have arrived at a degree of perfection truly wonderful.

The plain and figured alpacas especially are deemed to be nearly, if not quite equal to the *best* foreign makes of equal grade. The Company are to be congratulated on their decided success, and your Committee are unanimous in their opinion that they are deserving of your largest award, a *Gold Medal.*

1505. JOHN C. MORSE & Co., *Boston.* Dress and Alpaca Braids. A new article of manufacture in this country. Excellently well made, and fully equal, in color and finish, to the best foreign goods. We have heretofore depended entirely upon foreign manufacturers for this class of goods, which are extensively used in this country. Great credit is due to Messrs. J. C. Morse & Co. for the high state of perfection to which they have brought their goods. And your Judges are decidedly of the opinion that they are entitled to a *Gold Medal.*

1407. WASHINGTON MILLS, *Lawrence, Mass., by* E. R. MUDGE, SAWYER & Co., Agents, *Boston.* Black Eskimos and Tricots. Silk-mixed Tricots and Diagonal Coatings, well made and quite equal to foreign goods.

Fine specimens Sackings, superior finish and colors. A few samples of Embossed Table Covers, an excellent article.

Upholstery Cloths, decidedly a novelty, and destined to come into general use. Your Committee think this the first attempt at this kind of work in this country.

Specimens of long and square Plaid Shawls, superior colors, finish and style. Diagonal Worsted Shawls, a novelty, never before made in this country, and quite equal to the Scotch in style, colors and finish.

Balmoral Skirts and Worsted Skirt Cloths. Got up in very good style, and in a variety of colors, equal to anything of foreign make.

For the general excellence of the goods manufactured by the Washington Mills, we would recommend a *Gold Medal.*

1181. S. SLATER & SONS, *Webster, Mass., by* E. C. DYER, Agent, *Boston.* Eskimos and Black Cloths, quite equal to the best French and German makes, showing great advance in the manufacture of these goods. And for superior quality, color and finish of *Black Cloths,* your Committee recommend a *Gold Medal.*

Jaconets, by same, are quite equal to the English in colors and finish. *Diploma.*

1181. PEACE DALE SHAWLS, *by* E. C. DYER, Agent, *Boston.* Excellent in quality, style and colors. *Diploma.*

1145. JOHN H. BACON, *Boston Mass.* Feltings and Waddings. Very superior. *Bronze Medal.*

1120. JOHN SCHOULER & Co. Specimens Dyed and Printed Flannels. Styles and colors excellent. *Diploma.*

1594. CHARLES WILLIAMS. Designs for Delaines, Calicoes, &c. Very good. *Diploma.*

1336. BOSTON MANUFACTURING CO. Cotton, Woollen and Merino Hosiery. A new article of manufacture in this country, and the Judges recommend a *Bronze Medal.*

1358. BALLARD VALE CO., *Ballard Vale, Mass.*, J. P. BRADLEE, Agent. All-wool Flannels, excellent specimens, well manufactured and very well bleached; superior fabric in every respect. *Silver Medal.*

1111. J. W. SPRINGFIELD, *Wolfboro, N. H., by* PARKER, WILDER & Co., Agents, *Boston.* All-wool Extra Whitney Blankets, superior in every respect to any American blanket made, and entitled to a *Silver Medal.*

1606. UNION MANUFACTURING CO., ALMY, HOBART & Co., Agents, *Boston.* The Feltings presented by this Company in Black, Green and Red, maintain their high reputation, and have received a high premium before.

1339. CHELSEA WOOLLEN CO., STEPHEN SIBLEY, Agent. Balmoral Skirts. Very good. *Diploma.*

1572. JORDAN, MARSH & CO., *Boston.* Embossed Table Covers. An excellent article for general use. *Diploma.*

1376. Also Cassimeres, Flannels and Balmorals, by the same firm. *Diploma.*

1268. A. LEWANDO, *Boston.* Specimens of Dyed Goods. Most excellent specimens, and have been favorably noticed and awarded a Silver Medal by the M. C. M. Association before.

1359. MARSH, TALBOT & WILMARTH, *Boston.* Fitchburg Blue Cassimeres. Quite equal in color to the best foreign makes, and are deservedly popular. *Silver Medal.*

The same firm also exhibit fancy Cassimeres from the celebrated mills of Jesse Eddy & Son, Fall River, and Edward Harris, Woonsocket, Rhode Island, both of which possess novelty in weaving, and are favorably known and deservedly popular.

1537. HAILE & TODD, Cashmerets, *by* FROST & KIMBALL, Agents, *Boston.* Continue to maintain their well-earned reputation.

1543. Royalston Cassimere. FROST & KIMBALL, Agents. Excellent goods, and show an improvement over former Exhibitions. *Diploma.*

1333. EDWARD LEITENBERGER, *by* SPENCE & Co., Agents, *Boston.* Improvement in printing Cotton Fabrics. *Bronze Medal.*

1672. HARRIS WOOLLEN CO., *by* WHEELWRIGHT & COMERAIS, Agents, *Boston.* Six pieces fancy Cassimeres. Quality and style good. *Diploma.*

CLOTHING AND FURNISHING GOODS.

JUDGES:

W. C. REEVES, ELIJAH BEACH,
JAMES TOLMAN.

The Committee on Clothing and Furnishing Goods, having attended to the duty assigned them, by carefully examining the merits of each article submitted to their inspection, respectfully submit their Report without further comment than will be found in the notice of each article.

1092. G. A. FENNO, *Boston.* The only contributor of Boys' Clothing. The specimens are good, are designed in good taste, well cut, and very well made. *Diploma.*

1483, 1484, 1485, 1566, 1567. MARCH BROS., PIERCE & Co. These numbers are all in one case. It is a large, well-filled case, exhibiting a fine display of Paper Collars, Cuffs, beautiful Neck-Ties, Bows and Cravats.

One *new* feature in the Paper Collar exhibited by them is, its being reversible, that is to say, two faced, so that it can be worn on two sides; worthy of notice simply as such. Also a Scarf Supporter, invented by Mr. Snow, in the same case. *Bronze Medal.*

1363. F. M. BLODGETT & Co., *Boston.* Anklets and Gaiters for ladies' wear. The first of which are of beautiful material, excellent in design and workmanship. *Diploma.*

1494. JORDAN & WILDER, 191 *Washington Street, Boston.* Infant Protector. An article made of rubber cloth, which mothers will appreciate. The best thing of the kind known to the Committee.

Diploma.

1493. UNION ELASTIC GOODS Co., *Boston.* Samples of India Rubber goods, in various kinds of webbing, for Suspenders, and other forms to which the article is applied. Will bear favorable comparison with other manufactures, and the Committee concede to them all they claim, to wit: "goods manufactured by them are not excelled in workmanship or durable elasticity." *Diploma.*

1427. HATCH, JOHNSON & Co., *Boston.* Gray's Molded Collars. Decidedly the best in use, for beauty of form, quality of material, and their near resemblance to linen. *Bronze Medal.*

1557. Miss CARRIE BOARDMAN, (six years old.) One pair Miniature Stockings, of perfect proportions and very nicely made. In consideration of her age and genius, a *Diploma.*

297. **Eyelet Tool Co.**, *Boston*, by **G. W. Robins**, Agent. Eyelet Punch and Set in one. May be classed with the novelties of the times, being useful only to a limited extent, but of nice workmanship.

1373. **E. R. Cleveland**, *Boston*. A case of Shirts and Collars. The Shirts are the best on exhibition. Are of good material and nicely made. *Diploma.*

1184. **J. B. Macomber**, *Boston*. One case of Shirts of good workmanship. *Diploma.*

1541. **Simons Brothers & Co.** One case Metropolitan Shirts, which for fineness of fabric and beauty of finish take the first rank in that department of gentlemen's Shirts. *Diploma.*

1445. **Ipswich Hosiery Mills**, *Ipswich*, by **Lawrence & Co.** Samples of Children's and Women's Hosiery of cheap and fair quality, with apparently but little attempt at fineness of finish.

1336. **Boston Manufacturing Co.**, *Boston*. One case of Cotton and Woollen Hosiery. Judging from these samples this Company has laid the foundation for the production of an excellent article of Hosiery. The material is very good, but like a piece of superior cloth badly made up into a garment, has an incompleteness of construction always noticeable, but which, with a little more experience, can be overcome. *Diploma.*

1428. **Henry W. Burr**, *Boston, Mass.* A large case of Rubber Goods. Beautiful assortment of fancy articles which are worthy of notice. Something new in the way of a Neck-Tie; also a Piano Cloth Covering. *Bronze Medal.*

HATS, CAPS, AND FURS.

JUDGES:

Samuel O. Aborn, Jacob Norton,
Francis W. Ryder.

The exhibition of Hats and Furs was less extensive than could be desired, though all that were displayed are worthy of great commendation.

Messrs. **C. B. Grinnell & Samuel Emmes**, *Boston*. Of the manufacture of Furs generally, the Judges must speak in the highest terms; all the articles exhibited being well-made and tastefully finished.

We must, however, call particular attention to a Sable Cloak, manufactured by Messrs. G. & E., which for elaborate workmanship and economy of material, deserves the highest encomiums. The Cloak is made of twenty-seven skins, two of which form the collar. The natural length of the sable does not exceed twenty inches, and now the back skins of the Cloak are nearly if not quite thirty-five inches in length. In order to accomplish this lengthening, it requires about thirty cuts, each of which lengthens the skin about half an inch; and notwithstanding the immense quantity of cutting and sewing required for the above-mentioned article, the experienced eye of a practical furrier cannot detect the slightest fault.

We, therefore, take great pleasure in pronouncing it a perfect specimen of art. *Silver Medal.*

Messrs. COOK & ALDRICH, *Boston.* We beg leave to call attention to the Mink Muff, made from three skins belonging to Messrs. C. & A., the skins of which were lengthened from sixteen to twenty-two inches.

This is mentioned particularly, as the Muffs were evidently not made expressly for the Fair, but were taken from their general stock, and altogether, they make a magnificent display of well-selected and valuable Furs. *Bronze Medal.*

Messrs. A. N. COOK & Co., *Boston.* Have one, and the only case of Moleskin Hats in the Exhibition, which are of superior quality and excellent workmanship.

They also exhibit an excellent display of handsome and varied specimens of Furs. *Bronze Medal.*

Messrs. PALMER & Co., *Boston.* Exhibit a lot of Misses and Children's Hats, in great variety of elaborate finish, and worthy of commendation. *Diploma.*

FANCY MERCHANDISE.

JUDGES:

FISHER M. KEELER,
WILLIAM E. ABBOTT,
WARREN S. DAVIS,
A. S. JORDAN,
JOSHUA M. CUSHING.

The Committee having in charge the examination of Fancy Merchandise, respectfully submit the following Report, after a strict and careful examination.

1424. V. BRANDLEY & Co., *Boston.* Hair Jewelry. Very beautiful in design and workmanship, comprising a great assortment, superior to anything in the market. *Silver Medal.*

1545 HENSHAW, FAULKNER & Co. Flasks. Leather and Wicker covered, with and without Metal Cups. Heretofore the market has principally relied on imported goods of this kind. We consider these some of the best of American make; well finished, and in various styles and shapes. *Diploma.*

1264. GEORGE JAQUES & Co., *Boston.* Jaques' Extracts. A very valuable and meritorious article, comprising eight different perfumes. We consider it the "*ne plus ultra*" of American perfumes. *Bronze Medal.*

1369. JOHN P. JEWETT, *Boston.* Universal Safety Matches. An excellent article. *Bronze Medal.*

1418. RINN & Co., *Boston.* Carvings in Black Walnut. Very superior workmanship. *Silver Medal.*

1553. J. J. STEWART, *Boston,* by CHARLES MAINE. Three cases Stuffed Birds. Very fine. *Diploma.*

1504. C. KIRMES, *Boston.* Nine pieces Hair Work. Very fine and of superior workmanship. *Bronze Medal.*

1242. MARY A. STIMPSON, *Charlestown, Mass.* Two pieces Hair Work. Very beautiful. *Bronze Medal.*

1434. HENSHAW, FAULKNER & Co., *Boston.* Madam Dùpont's Extracts. A very excellent article, comprising various perfumes. *Diploma.*

1337. ALVAN L. LOVEJOY, *Boston.* Butternut Goods. Very curious and pretty. *Diploma.*

1240. C. B. GRINNELL & SAMUEL EMMES, *Boston.* Stag and Tiger, artistically arranged. *Diploma.*

1093, 1099. HENRY LEACH, *Boston.* A very handsome variety of Carvings in Wood. *Silver Medal.*

1106. THOMAS HAYES, *East Cambridge, Mass.* A very handsome variety of Preserved Moths and Butterflies. Arranged with great skill and taste. *Bronze Medal.*

1236. R. T. WOODWARD, *Roxbury, Mass.* Very fine specimens of Wood Carvings. *Diploma.*

1281. HODGES & COLMAN, *Boston.* Papier-Mache Goods. A very excellent variety. *Bronze Medal.*

1673. WILLIAM S. TOWER, *Hingham, Mass.* A very curious Pail, composed of 47,568 pieces of wood. A very elaborate piece of workmanship. *Diploma.*

1393. CHARLES J. ATKINSON, *Boston.* Glass Top Table. Very handsome.

1368. DAVID J. PEARSON, *Boston.* Silver Nurse-Spoon. A new invention. An excellent article for the nursery or sick-room, comprising a dial, stand and cover. An almost indispensable article. *Bronze Medal.*

1284. JOSEPH LYON & CO., *Boston.* Umbrellas and Parasols. Very good and tasty. *Bronze Medal.*

97. MARTIN L. BRADFORD & CO., *Boston.* Fishing Tackle and Artificial Flies. A very superior collection, comprising all kinds and styles, which we think equal to any imported. *Silver Medal.*

123. L. BYRNES, *Boston.* Boxwood Field Croquet. A very fine set, having rubber inserted in the ends of the mallets to protect the balls. A superior article. *Diploma.*

1475. D. G. PRATT, *Boston.* Parlor Croquet. A very excellent article.

283. JORDAN & WILDER, *Boston.* Shell Combs. Good designs and finish, embracing a very large variety. *Diploma.*

803. C. H. R. CHENEY, *South Reading, Mass.* Very curious Bone Work, made while in the army. *Diploma.*

1499. Mrs. JEREMIAH FRENCH, *Bangor, Maine.* Bead Work. Very beautiful. *Diploma.*

1640. G. S. CHASE, *Newton Centre, Mass.* Fancy Wood Frame. Very curious.

1293. FREDERICK WETIN, *Roxbury, Mass.* Farragut Table. A very exquisite piece of workmanship. *Diploma.*

226. P. H. WALKER & CO., *Boston.* Fishing Tackle. A very excellent assortment. *Diploma.*

1010 LEWIS BONNEY, *Boston.* Silver Table Ornament, formerly the property of Jeff. Davis.

1023. Miss LIZZIE E. STONE, *Charlestown.* Hair Wreath. A neat article of workmanship. *Diploma.*

1051. Miss A. C. WHEELER, *Cambridgeport, Mass.* Bracket made by her with a pen-knife. Neatly done.

1057. J. H. NOTTAGE, *East Boston.* Hair Wreath. Good work.

1050. ARTHUR O'NEIL, *Boston.* Full-rigged Ship. Very good.

1071. JAMES W. LOUCH, *Boston.* Miniature Ship, carved in wood. Finely done.

1083. Miss ELEANOR COLLINGWOOD, *Plymouth, Mass.* Case of Butterflies. Well preserved and life-like. *Diploma.*

1089. Mrs. Ezra Payne, *Randolph, Mass.* Miniature Farm. The best of its kind.

1099. John Parker, *Roxbury, Mass.* Whittled Relics. Good.

1103. Herbert Gleeson, *Malden, Mass.* Carved Lion's Head. Very good carving.

1105. Mrs. Mary A. Phippen, *Charlestown, Mass.* Shell Frame and Hair Work. Good taste.

1108. Miss Mary Dashwood, *Boston.* Three pieces Shell Work. Very fine.

1130. Mrs. S. A. Woodbridge, *Boston.* Fancy Chair. Worked Seat. Neatly done.

1151. Mrs. Mary E. Thaxter, *Charlestown.* Cone Basket. Very tasteful.

1170. Miss Emeline Kingman, *Chelsea, Mass.* Hair Wreath. Very nice work.

1177. Miss Emma A. B. Robinson, *South Boston.* Daughter of the Regiment. Very neatly dressed.

1185. Mrs. Adelaide Bolton, *Charlestown, Mass.* One Shell Basket and two Monuments. Best shell work.

1191. Mrs. Sarah Smyth, *Boston.* Shell Frame. Good.

1194. Mrs. E. B. Parker, *Chelsea, Mass.* Church and Parsonage. Very ingenious.

1196. Mrs. C. A. Massey, *Quincy, Mass.* Carved Frame. Best specimen.

1203. William Wheell, *Boston.* Carving and Painting. Superior execution.

1211. Hiram Bartlett, *Charlestown, Mass.* Two Model Vessels. Very good.

1216. Miss F. M. Lamson, *Charlestown, Mass.* Agricultural Wreath. A very clever arrangement of flowers and green seeds.

1221. Mrs. Cyrus Andrews, *Essex, Mass.* Cone Frame with Feather Wreath. An excellent specimen.

1231. W. H. Whitcomb, *West Cambridge, Mass.* Collection of Butterflies. Very pretty.

1233. Miss C. M. Jordan, *Boston.* Card Cross in Frame. Very good.

1251. Rufus Crowell, *Chelsea, Mass.* Two Specimens Japanese Crystals. Clear and brilliant.

1253. J. G. Hunt, *Boston.* Sixteen pieces Shell Work. Elegantly done. *Diploma.*

1259. G. H. Whitman, *Billerica, Mass.* Pen-knife Carving. Ingenious.

1275. Miss H. E. Parker, *Roxbury, Mass.* Cone Frame. Prettily arranged.

1300. Horace B. Parker, *Roxbury, Mass.* Plantation Darkey. Shows mechanical ingenuity.

1346. Mrs. J. O. Carter, *West Cambridge, Mass.* Hair Wreath. Good taste.

1348. Mrs. L. Rand, *Groton, Mass.* Eleven baskets Bead Blackberries. Very natural.

1354. E. E. Moore, *New York.* Improved Ink Blotter. Useful.

1401. N. K. Strange, *Boston.* Hair Flowers. Neatly arranged.

1409. Mrs. H. E. Cobb, *Charlestown.* Cone Frame. Very artistic.

1416. Mrs. C. B. Gardner, *Boston.* Hair Bouquet. Very neat.

1425. Edwin F. Rose, *East Boston.* Ship. Shows mechanical ingenuity.

1478. Ephraim Prockett, *Somerville, Mass.* One Carved Frame. Meritorious.

1524. Mrs. C. H. Jennison, *West Newton.* Onion Skin Flowers. A novel idea.

1492. Miss E. L. Goodale. Wax Flowers and Wax Vases. *Diploma.*

1214. Miss M. L. Wheeler, *Boston.* Worsted Picture. Very nice work.

1139. Mrs. George H. Dickerman, *Somerville, Mass.* Pressed Flowers in Cone Frame. Tastefully arranged.

1262. Benjamin Harman, *Boston.* Synoptical Needle Cases. The use not generally understood.

1340. W. P. Chase, *Boston.* Specimens Edge-Tooling for Albums. Finely executed.

1545. Rev. R. Thayer, *Boston.* Lincoln Memorial. *Diploma.*

1281. Hodges & Colman, *Boston.* Japan Inlaid Work. *Bronze Medal.*

1403. Mrs. L. Mulliken, *Boston.* Assorted Flowers. A beautiful variety. *Diploma.*

1561. Mrs. H. M. VINTON, *Boston.* Hair Wreath. Very good.

1319. WASHBURN & Co., *Boston.* Wardian Case.
Bronze Medal.

1495. Miss LYDIA AMES, *Malden.* Bead Work by Blind Children. Very good.

1570. Mrs. T. Q. BROWNE, *Roxbury, Mass.* Painting. Beacon Hill Monument. A curiosity.

1589. Mrs. M. A. ROBERTS, *Boston.* Shell Frame and Hair Wreath. Very good. *Bronze Medal.*

[Many other specimens of Hair Work worthy of commendation are not enumerated for want of space.]

1599. LEONARD C. BAKER, *Boston.* Checker Board Table. Fine specimen of inlaid work. *Diplôma.*

1602. Miss ANNE HODGES, *Boston.* Case Bead Work. Very nicely executed.

1612. Mrs. C. A. CROCKETT, *Boston.* Autumn Wreath. Newly arranged.

1617. Mrs. HENRY CUTTER, *Winchester, Mass.* Shell Wreath. Excellent. *Diploma.*

1619. Mr. MASARD, *Roxbury.* Engraving on Glass. Beautifully done. *Bronze Medal.*

1635. Mrs. C. H. WEBB, *Charlestown, Mass.* Seed Wreath in Shell Frame. Very pretty indeed. *Diploma.*

1649. WILLIAM MILES, *Boston.* Case Glass Work. Very handsome.

1657. T. F. SWEENEY, *Boston.* Two Chairs. Specimens of coloring. Well done.

1658. FRANCIS G. HARDING, *Boston.* Patent Chair. Boot and Shoe Polisher. A neat, compact chair, containing the requisite tools for blacking boots, without soiling the hands.

1650. JOHN MILLER, *East Boston.* Model Ship. The best model of a full-rigged ship. *Bronze Medal.*

1666. THOMAS A. ARMS, *Boston.* Case Decalcomania. This is a process of transferring pictures to any material, such as crockery ware, wood-work and glass. *Diploma.*

1532. N. Vickery, *Lynn, Mass.* Two Cases Stuffed Birds. A very choice collection, worthy of much commendation.
Bronze Medal.

1266. A. S. Parsons. Hat Brushes. Useful invention.

283. Jordan & Wilder, *Boston.* Cantering Horse. The inventor is protected by five patents in the United States and Europe. They are unequalled as a means for agreeable and healthful out-door exercise for children. *Diploma.*

283. Jordan & Wilder, *Boston.* Brown's Baby-Tender. This is a new patented invention, comes cheaper than a crib, and combines ten different changes. The changes are very simple and easily arranged.
Diploma.

757. W. W. Webster, *Boston.* Papier Maché. Carved Ornaments. Very good.

274. L. A. Tolman. Specimens of Picture Frames. Good work and designs.

456. Dodge & Leahy, *Boston.* Specimens of Picture Frames. Very good.

1058. J. F. White, *Boston.* Agricultural Wreath. Novel work, beautifully executed. *Bronze Medal.*

32. Albert A. Pope, *Brookline, Mass.* Miniature Siege Mortar, made from rebel bullets thrown at the siege of Petersburg.

6. Wesley Pearce, *Boston.* Umbrella Frame. Good work for an apprentice.

CHEMICALS, PAINTS, &c.

JUDGES:

Augustine G. Stimson, S. Dana Hayes,
A. Sigourney Bird.

This department of the Exhibition has been well represented by a great variety of articles, and although the new manufactures and improvements brought to the notice of the Committee have not been of such great importance as in some of the other departments, still it is with much pleasure that we call your attention to such as have been introduced and improved upon within the past five years.

The manufacture of Bread has been investigated in detail, as being a new subject at these Exhibitions, and one of great sanitary importance. The distillation of Petroleum and the refined products, was well illustrated; the Napthas, Burning and Heavy Oils, Paraffine, and the Gas, Dryer's, Currier's Lubricating Wool Oils, Candles, &c., as manufactured from Rock Oil, are new to these Exhibitions, of great importance, and highly commendable.

Your attention is also called to the progress in the production of Wines, Brandies, and Fine Chemicals; to the manufacture of Green Colors, Soaps, Blackings, and the process for Bronzing iron goods; all of these are considered as deserving of high awards, inasmuch as their excellence obviates the necessity of importing these articles.

In the daily visits of the Committee to the Exhibition Halls, they were occasionally brought up before long rows of many-sized bottles, purporting to contain medicines for the cure of every possible disease. It was at such times that they felt their utter inability to accomplish the duties before them; but after mature deliberation, it has been decided, that these substances would merit the highest awards, were they as infallible as the proprietors undoubtedly believe; but the experiences of your Committee do not justify such a report.

The duties of the Chemical Committee have required labor, attention and patience; the examinations and analyses have been made with accuracy, and in every case the judgments and awards have been given with perfect unanimity.

1249. John Urie, *Hingham, Mass.* Specimen of Dyed Yarn. Well dyed and new colors.

Howe & Stevens, *South Boston.* Dye Colors. These "Family Dyes" consisting of dyestuffs and mordants, mixed and prepared for immediate use, answer the purpose admirably, are neatly put up, and of great convenience, rendering many garments or fabrics, which would otherwise be thrown away, of service in the household. The Committee recommend the award of a *Bronze Medal.*

1664. D. J. Brown, *Boston.* New England Brandies. Three samples. That made from native grape, "vintage 1861," is a pure, highly flavored, good brandy; it merits encouragement as a domestic manufacture, and a better article than much that is sold here for French brandy. That of "vintage 1865" is not so highly flavored. The "Golden Sorghum" brand is better than the California brandies. The Committee would have recommended an award to this contributor, if these samples had represented larger quantities.

G. D. Dows, *Boston.* Native Wines. These wines are pure and excellent for domestic use. *Diploma.*

Francis E. Yates. Native Wines. The Committee examined no less than ten different varieties of these wines. They are quite pure and wholesome, neatly put up, and manufactured at Belmont, Massachusetts, in large quantities. As these wines provide a good, cheap beverage, and the maker has, at considerable outlay, provided facilities for maintaining their superiority, we consider them entitled to a *Bronze Medal.*

519. B. E. Deland, *Boston.* Case of Cherry Bounce. In quart bottles, neatly put up. A good, pure and agreeable article.

Perkins, Stern & Co., *Boston.* California Wines. The contributors are agents for the manufacturers. These wines are of American production, deserving encouragement. The Hock is nearly equal to the imported article, and we notice much improvement upon the earlier California wines. Looking forward to still greater success in this manufacture, the Committee recommend a *Bronze Medal.*

C. A. Richards, *Boston.* California Wines. The contributor acts as agent for the manufacturer. The Committee examined these samples of wine, as well as those last mentioned, with great care, but were unable to decide upon which to bestow the highest award. The wines put up by both parties are neatly bottled and very attractive. *Bronze Medal.*

Mr. Richards also exhibits samples of "Golden Sheaf Whiskey." It is of superior quality.

622. Boston Wheat and Bread Co. Bread. This bread, as exhibited, is pure flour, salt and water; the loaves are of good weight, well baked, white, of fine texture, wholesome, and quite palatable. The bakery of this Company has been repeatedly visited by the members of the Committee; the good quality of flour, and extreme cleanliness there were noticeable, while the mode of manufacture and kneading insures uniformity. By a large investment of capital, this Company are enabled to provide this all-important article to the million; it is suitable for the first table in the country, and at the same time is cheaper for the poorest laborer than any other bread. Contending against great difficulties, this Company have wrought a wonderful improvement upon their earlier productions, and fully merit a *Silver Medal.*

B. F. Brown, *Boston.* "*Cirage Francais.*" An excellent dressing for boots, shoes, &c., which have become red or rusty by wearing. There is nothing present to injure the finest leather, and as this supplies the public with an article long needed, we advise a *Bronze Medal.*

Mr. Brown also exhibits liquid and paste blacking, which has received suitable awards from former Committees.

J. F. Merriam, *Boston.* Blacking for Leather. An article intended for new leather work; it is a good, durable, penetrating black, without polish, excellent for mouldy boots and shoes. The Committee recommend a *Diploma.*

George Jaques & Co., *Boston.* "Raven's Wing" Blacking. This contains no ingredient injurious to the leather; it produces a brilliant polish, quickly and easily, and after most careful comparative trials, it has been decided that it is in every respect equal to the best European blacking, although sold at retail for two-thirds of the price. That an American should succeed in producing so desirable an article, is a matter of congratulation. This is a durable polishing blacking, and neither an oil polish or water-proof compound. In consideration of the great improvement effected by the manufacturer, the Committee recommend a *Silver Medal.*

J. W. Gates, *Boston.* Liquid and Paste Blacking. A very "smooth" blacking, easily polished, brilliant, and contains nothing injurious. *Diploma.*

251. William R. Warner, *Boston.* Oil Polish Blacking. Contains a large proportion of neat's foot oil. Very good.

274. A. Tyler, *Boston.* Bartlett's Blacking. This is a good oil polish.

Dunham, Whorff & Co., *Boston.* Worcestershire Sauce. So good a substitute for the imported article, that the Committee recommend a *Diploma.*

E. A. & W. Winchester, *Boston.* Family Soaps. These manufacturers have made a fine exhibition of Soaps in large boxes; these consisted of white "soda soap," containing the purest ingredients found in any soap; it is a perfect article. The three grades of "Family Soaps" are pure, but of different prices, corresponding to the quality of materials used. The "Chemical" and "Castile" Soaps are also pure, and deservedly popular. These manufacturers have not only maintained the quality of their productions, but they have greatly improved them, employing new materials and processes. In consideration of the superior excellence of these Soaps, the Committee have awarded a *Silver Medal.*

Kendall Manufacturing Co., *Providence, R. I.* Castile Soap. The materials used in this manufacture are good and pure. It is an excellent article, comparing favorably with any of the imported Castile soaps. The Committee advise a *Bronze Medal.*

807. George E. Emery, *Lynn, Mass.* Novelty Soap. A well manufactured article, and very good.

520. Spear & Wentworth, *Boston.* Champion Scouring Soap, in tubs and moulds.

ADAMS, BATCHELDER & Co. Manufactured Tobacco. The best of leaf has been used; the different kinds of tobacco exhibited are pure, very neatly put up, and the decided superiority of their manufactured articles over anything of the kind that the Committee have met with before, fully deserves a *Bronze Medal.*

SECCOMB OIL MANUFACTURING Co., *Boston.* Petroleum Products. In this case we find exhibited the finest collection of products from Rock Oil. The Benzine is remarkably free from odor, and the same may be said of the Burning Oil, which is also not explosive. The heavy Lubricating Oils were tested and found to be of the best quality. The pressed Paraffine was very pure and handsome. As before mentioned, this is a new manufacture at these exhibitions, and as this Company make the greatest variety of products, all of superior excellence, the Committee recommend a *Silver Medal.*

SHAWMUT OIL Co., *by* GRANVILLE MEARS. Paraffine and Lubricating Oils. We also find samples of Burning Oil. These are of good quality and manufactured from Petroleum, deserving a *Diploma.*

744. A. C. MASURY & Co., *Boston.* Case of Petroleum Oils. The Burning Oil is of good quality and not explosive.

UNION COAL OIL Co., *by* BAILEY & EATON. Products from Cannel Coal. The oils, "greases," paraffine and candles exhibited, are of the best quality. It is of great importance that the destructive distillation of Coal for Oils, &c., should be maintained and encouraged, as it is a permanent, never failing source of these substances. The Committee advise a *Bronze Medal.*

551. B. DICKERMAN, Jr. & Co. Oil Soap and Burning Oil. Very good Whale Oil Soap. Petroleum Burning Oil was nearly colorless.

1. GOULD & RUGGLES, *Boston.* Specimens of Mica. Large sized sheets, remarkably perfect; smaller ones of the same, cut to different sizes. This mineral has been favorably noticed by former Committees, and it has not deteriorated.

696. CALVIN GRAY, *Boston.* Mineral Paint. A good, cheap Paint for outside work.

COVELLE PLATE POWDER Co., *Boston.* Polishing Powder. An article very easily applied, and one which accomplishes the work to perfection. It contains no injurious ingredient, and may be used on the finest ware without the addition of water, oil, or any fluid. *Diploma.*

316. LUTHER W. CLARKE, *Boston.* Case of Minerals. A fine display of valuable minerals.

358. JAMES GOULD, *Boston.* Muriate of Lime. This fertilizer is highly recommended. It has received suitable awards at a former Exhibition.

74. AMERICAN MAGNESIUM CO., *Boston.* Magnesium and Sodium. The preparations to produce this beautiful metal on this side of the Atlantic, prove that we have American Chemists of great ability, whose aim is to prevent the importation of even the rarest chemicals which may be just as easily manufactured at home. Wishing these contributors great success in their undertaking we cordially recommend them to the public.

120. JAMES F. BABCOCK, *Boston.* Case of Chemicals. Containing Re-agents and Chemicals which the contributor is prepared to supply. Apparently good, pure, and of domestic manufacture.

JAMES R. NICHOLS & CO. Fine Chemicals. An elegant display of pure Chemicals including Chloride of Gold, Ethers, Essences, Salts of Iron, &c. The maintenance of a laboratory like that of this firm, shows that their productions are excellent and well appreciated. Photographers' chemicals and pharmaceutical preparations like the above are manufactured here in any quantity, to order. Although this firm have received awards before, the Committee wish to honor their new preparations with a *Bronze Medal.*

HENRY WOOD & SON, *Boston.* Marseilles and Chrome Greens. The brilliancy, body and uniform good quality of the Chrome Greens made by this firm, have secured the confidence of dealers and consumers of the article. Their Marseilles Green is a brilliant fine color. As these are the standard greens in this market, of domestic manufacture, and capable of supplanting the injurious Paris Greens, the Committee advise a *Silver Medal.*

508. CARRUTH & SWEETSER, *Boston.* Linseed Oil, Meal and Cake. These are of the best quality, and standard articles; the sample of Oil exhibited is certainly of superior quality.

796. LEE, CROCKER & CO., *Boston.* Linseed Oil and Cake. The samples of Oil and Cake exhibited, are of very fine quality, and carefully manufactured.

TARR & WONSON, *by* MAYO & TARR. Copper Paint for Ships' Bottoms. This Paint covers the bottoms of wooden vessels with a coat of metallic Copper, preventing the boring of worms, or growth of weeds. Judging from the chemical examination, the specimens exhibited, and the very high recommendations of all the painters and shipmasters who have used this Paint, it answers the purpose perfectly, and is highly commendable. For this new application of material the Committee advise a *Bronze Medal.*

Thomas D. Morris, *Boston.* Assorted Paints. Mixed and tinted Paints ready for use. The mode of manufacture insures uniformity and excellence. *Diploma.*

Charles M. Spooner & Co., *Boston.* Rubber Paint and Black Varnish Paint. The Rubber Paint for roofs, so far as the experience of the Committee goes, is excellent. The Black Varnish Paint is made from good material; it is admirably adapted to outside iron work, and kindred purposes, being superior to anything of the kind that can be supplied at a moderate cost. For this new application of material the Committee recommend a *Bronze Medal.*

630. Granville Mears. Winter Lard Oil. A good article, white and clean.

Alden Speare, Agent, *Boston.* Lard Oil, Candles and Starch. The Oils are remarkable samples, very nearly colorless and pure. The Starch is very white, and the Candles of fair quality. These are of Western manufacture. For the Oils, a *Diploma.*

Samuel Leonard & Sons, *New Bedford, Mass.* Whale Oils, Spermaceti and Candles. Of excellent quality. The Oils are well-bleached and purified; the large mass of crystalized Spermaceti attracted much attention. These manufacturers have received an award from a former Committee, but as improvements are noticeable in the Oils and composition Candles, we consider them entitled to a *Diploma.*

873. Edward Counihan, *Boston.* Water-Proof Compound, for Boots, Shoes, &c. This Compound softens and fills up the pores of the leather; it is well adapted for the purpose, and contains nothing to injure the leather.

A. O. Crane, *Boston.* Grease Extractor. It is partly a soap and may be used without fear. The Committee applied it with success, and find it very highly spoken of by many tailors. *Diploma.*

264. H. H. Hooper, *Boston.* Chalcidean. A detergent fluid for aiding the washing of clothes, &c. It will do all that the label represents, but should not be used too strong.

A. G. Barber, *Woonsocket, R. I.* Gelatine. Of superior quality, manufactued by the contributor. The Committee recommend a *Diploma.*

656. William Bogle, *Boston.* Mystic Hair Tint. Mr. Bogle's Hair Dye is different from any other known to the Committee; the

proprietor has submitted the formula, and upon examination it was found to contain ingredients that should produce the desired effect. The other preparations have received notice at former Exhibitions.

Hiram Tucker & Co., *Boston.* Bronzed Iron Castings. This process for Bronzing Iron has been fully investigated. It was invented by the contributors, and is applied on a large scale at the Charlestown State Prison. Fine Iron Castings, such as medallions, lamps, chandeliers, &c., are bronzed at a very trifling expense, so that such articles can be made at one-half the cost of the same in alloy. From the nature of the process, (being accomplished at a high heat,) there is every reason to believe that this covering will wear well; it certainly is not removed by the common solvents, alcohol, benzine, water, &c. The Committee consider this a matter of great importance, as bringing these beautiful, durable articles into more common use at such small cost. Meriting a *Silver Medal.*

FLOUR, STARCH, &c.

JUDGES:

S. G. Bowdlear,	Amos Cummings,
Asa Wade,	Avery Plumer.

The Committee on Flour, Starch, &c., report as follows, viz.:—

FLOUR.

Six samples were submitted to the Committee, numbered 90, 86, 451, 919, 140, 53. Each sample was of a high grade. Of numbers 90, 86, 451, 140, 53, two, numbers 90 and 140, (H. W. Chickering, *Boston,*) are of marked excellence and nearly alike; but the Committee decide that number 90 (Chace & Mason, *Fall River,*) is the best.

Bronze Medal for best; others Diploma.

Sample numbered 919 is of an entirely different kind of Flour, and in itself is of excellent quality, but can only properly be compared with other brands made from the same description of wheat.

WHEAT MEAL OR GRAHAM FLOUR.

Of this, three samples were submitted, numbered 119, 140, 205. They were all of good quality, but sample number 205 (E. Gilman & Son, *Boston,*) is in all respects decidedly superior. *Diploma.*

BUCKWHEAT FLOUR.

One sample only, numbered 53, (Lincoln & Beal, *Boston,* Agents,) was submitted, and that was of superior quality.

STARCH.

One sample, number 363, (Saml. Leonard & Sons,) of this, which was judged to be Corn Starch, of superior quality for laundry purposes.

BREAD.

C. F. Austin & Co., *Boston.* A large sample of Butter, Sugar, Wine and Soda Crackers put up in fine style; and Navy and Pilot Bread, put up in tierces, barrels and boxes, in very fine order for shipping.

This Bread is claimed to be, by the contributors, as something entirely new, from some peculiarity in the oven in which it is baked.

Bronze Medal.

CONFECTIONERY AND PRESERVES.

JUDGES:

George Young, Tyler B. Gaskill,
Elisha B. Ford.

The Committee on Confectionery, Preserves, &c., have to regret that very few articles have been submitted to them for examination; yet they are happy in being able to say that the articles on exhibition, though small in number, are excellent in quality.

1487. Charles Copeland, *Boston.* Two cases of Wedding Cake. In one of these cases is a loaf of very excellent cake, most elaborately ornamented, displaying a very high order of taste with consummate workmanship. The second case is of more really practical value, for with a very agreeable exterior is a most excellent and palatable interior—first rate cake, well frosted and ornamented. The Committee consider Mr. Copeland entitled, for his good taste and skill, to a

Bronze Medal.

535. Stevens & Co., *Boston.* Samples of a considerable variety of Fruit Jellies, prepared for shipping and for domestic use. These Jellies are very nicely prepared, and their flavor is excellent. They are neatly put up in half-pint jelly tumblers, and packed in cases containing one dozen each—assorted or not. The varieties exhibited were currant, grape, apple, quince, orange, cranberry, lemon, black currant and barberry. The Committee recommend for the very superior manner in which the Jellies are made, a *Bronze Medal.*

802. Scrannage & Co., *Boston.* Cocoa-nut Machine. This is an instrument for preparing the fruit of the cocoa-nut for culinary purposes, and appears well adapted for performing what is required of it. To the

confectioner it appears to be a labor-saving machine of easy application. The Committee consider it worthy of a *Diploma.*

1033. Mark Allen, *Worcester, Mass.* Cough Lozenges. Very neat in their appearance.

636. Carleton & Hovey, *Lowell, Mass.* Show Bottle, filled with Troches. These are medicated, and intended to alleviate coughs, and if neatness could do that, the Lozenges would certainly answer some good purpose.

In reference to the last two mentioned articles, the Committee can speak well of their mechanical appearance, but of their medical qualities, a different trial must be made than that which the Committee can be expected to give to them.

PIANO-FORTES AND OTHER MUSICAL INSTRUMENTS.

JUDGES:

F. H. Underwood, Charles J. Capen,
Stephen R. Clapp, George J. Webb,
H. Ware, E. L. Holbrook,
George W. Harris, William H. Goodwin,
Carl Zerrahn.

The Committee on Piano-Fortes and other Musical Instruments would respectfully report that the following articles have been examined by them, viz.:

1154. I. H. Arey, *Boscawen, N. H.* Violin, Guitar and Banjo.

1265. Hazelton Brothers, *Boston.* One Piano.

1311. Samuel Pierce, *Reading.* Organ Pipes.

1371. John White, *Boston.* One Violin.

1378. C. C. Ryder, *Boston.* Piano-Forte Action.

1382. Paul, Humphrey & Co., *Boston.* Carved Piano-Forte.

1461. Daniel Dunbar, *Boston.* Four Violins.

1535. Mason & Hamlin, *Boston.* Cabinet Organs.

1540. Chickering & Sons, *Boston.* Twelve Pianos.

1547. George M. Guild & Co., *Boston.* Three Pianos.

1563. Parkinson & Sons. Two Piano-Fortes.

1573. Hallett, Davis & Co., *Boston.* Nine Piano-Fortes.

1590. G. A. Miller & Co., *Boston*. Two Piano-Fortes.

1604. McPhail & Co., *Boston*. Piano-Fortes.

1614. J. W. Brackett, *Boston*. Pedal Piano.

1661. William B. Bradbury, *New York*. Piano-Forte.

1675. J. W. Brackett, *Boston*. Pianino.

51. Carl Lehnert, *Boston*. Two pairs Cymbals.

51. B. F. Richardson, *Boston*. One B-flat and one E-flat Cornet.

66. E. G. Wright & Co., *Boston*. Musical Instruments.

288. Henry Lehnert, *Boston*. Case Musical Instruments.

Your Committee feel deeply sensible of the delicate nature of the duty they have undertaken to perform. If it were the ordinary case of the inspection of ingenious mechanism or rare workmanship, it would be comparatively easy to decide upon competing claims; but the construction of musical instruments requires not only mechanical skill, but knowledge of acoustics, appreciation of musical quality of tone, and the adaptation of all the parts to the production of artistic effects.

Without disparaging any purely mechanical labor, or setting up any undue claims for this branch of art, your Committee think it would be difficult to name any department of industry for which is requisite so much pains in selection of material, such experience and judgment in construction, such delicate perception of musical tone, in fine, such thorough union of mechanical skill and æsthetic taste as is employed in the manufacture of musical instruments.

Your Committee are satisfied that there has been in no branch of mechanical industy a more steady and rapid progress. The power and scope of the piano-forte, its resonance, the ease and rapidity of its action, and delicacy of touch, have constantly improved, until it may safely be assumed that the most indifferent maker surpasses in many respects the efforts of the most celebrated names of a quarter of a century ago. One change in the scale of those of recent date, however, is, in one respect, of questionable benefit. We refer to the mode of adjusting the strings at different angles of tension, popularly known as the "over-strung" scales. Increased power is undoubtedly gained in this way, but at the cost of all evenness of tone; in passing from one group of strings to the next, the points of intersection are readily detected by the most ordinary ear, and the transition is as unpleasant as the breaks between the registers of an uncultivated voice.

Your Committee being fully aware that it has been common among interested people to depreciate the value of honorary awards by alleging that they are obtained by favoritism, or that committees commence their examinations under the influence of invincible prejudice, determined to anticipate such criticism by giving an unquestionable guarantee of fairness. Before making any examination of the competing piano-fortes they requested the management to cover the names on the front, to arrange the instruments without method, and to leave only a dim light in the exhibition room. This order was strictly carried out, and your Committee made their examination in a darkened room, without the possibility of knowing the makers of the instruments they were deciding upon. Whatever may be the worth of the judgment which they now give to the management, it is certain that it was made without any prompting of interest, prejudice or bias.

The Committee recommend the following awards:

To Messrs. Chickering & Sons for the best Grand Piano-Forte, the first *Silver Medal.*

To the same for a fine Semi-Grand, a *Silver Medal.*

To Messrs. Hallett, Davis & Co., for a very superior Grand Piano-Forte, the second *Silver Medal.*

To the same for a fine Parlor Grand, a *Silver Medal.*

To Messrs. Chickering & Sons for their upright Piano-Fortes, a *Silver Medal.*

To the same for the best Square Piano-Forte, the first *Silver Medal.*

To Messrs. Hallett, Davis & Co., for a very excellent Square Piano-Forte, the second *Silver Medal.*

To Messrs. George M. Guild & Co., for a Square Piano, a *Bronze Medal.*

To Messrs. A. M. McPhail & Co., for a Square Piano-Forte, a *Bronze Medal.*

To G. A. Miller & Co., for a Square Piano-Forte, a *Bronze Medal.*

To J. W. Brackett, for his Pedal Piano-Forte for organ practice, a *Diploma.*

To Hazelton Brothers, for Square Piano, a *Diploma.*

To Paul, Humphrey & Co., for Square Piano, a *Diploma.*

To Parkinson & Sons, for Square Piano, a *Diploma.*

To W. B. Bradbury, for Square Piano, a *Diploma.*

ited Piano-Forte Makers, for Square Piano, a *Diploma.*

The instruments made by Messrs. Chickering & Sons your Committee consider as being very remarkable for their excellence, even when compared with the Exhibitions of former years.

Their Grand Piano-Fortes are eminently satisfactory; so perfect, indeed, it may be difficult for a long time to make any decided improvement either in evenness of scale, brilliancy, fulness and fluency of tone, elasticity of touch, ease and promptness of action, or in the special singing quality which so many modern compositions require.

Your Committee especially designate No. 28065 as having, in their judgment, the sweetest tone, and as being the most desirable instrument for the drawing-room; they also mention No. 28050 as a piano-forte of extraordinary power, with a richness and pungency of tone, and decision of action, that would be very effective in the concert room.

The upright Piano-Fortes of Messrs. Chickering & Sons, when the inherent difficulties of construction are considered, are even more praiseworthy. The improvement in these instruments is marked. The "jangle" as well as the metallic jar, which haunted them of old, has disappeared, and they "damp" almost as promptly as their great rivals. In quality of tone they are delightful, and they will undoubtedly come more into favor, especially with those who have not room for the larger instruments. The one especially commended by the Committee is No. 28321.

Two Square Piano-Fortes of Messrs. Chickering & Sons at first about equally divided the judgment of your Committee; viz.: Nos. 28293 and 28340. The preference was finally given to the first named for superior richness of tone, while the latter was allowed to be more fluent and more brilliant.

The Grand Piano-Fortes of Messrs. Hallett, Davis & Co. have many very admirable features; they have a great body of tone, and are specially commended for their fine touch and their beautiful singing quality.

The Square Piano of the same makers, No. 12790, was very much admired. It has great fulness, depth and mellowness of tone, and in certain grave styles of music would probably be unexcelled by any similar instrument on exhibition.

In the department of Reed Instruments, there was but one entry—the Cabinet Organs of Messrs. Mason & Hamlin, and the Committee, in consideration of the valuable improvements known as the "Automatic Swell," and the "Combination Register," as well as of the excellence of tone and beautiful workmanship displayed in these instruments, recommend the award of a *Silver Medal.*

The Committee further recommend an award to—

E. G. Wright & Co. A full set of Brass Instruments of superior tone and workmanship, the first *Silver Medal.*

Henry Lehnert. Smaller Brass Instruments, and improved Alto Horn, the second	*Silver Medal.*
Carl Lehnert. Fine toned Cymbals, a	*Diploma.*
B. F. Richardson. Silver Cornets.	*Bronze Medal.*
Samuel Pierce. Beautifully made Organ Pipes.	*Bronze Medal.*
John White. Violin.	*Diploma.*
E. G. Wright & Co. Newly invented Book Rack.	*Diploma.*
Edward L. Balch. Specimens of Musical Typography.	*Diploma.*

The Committee would remark that most of the violins were so completely out of order that they could form no judgment concerning them.

APPENDIX.

The Committee, after having made the foregoing award, guided by a construction of the rules which, in the opinion of many of their number, allowed no proper recognition of the merits of the instruments, and no adequate award for improvements, desire to express to the government of the Association their opinion, that the highest honor is much more appropriate for such a magnificent Grand Piano-Forte as has been named for the first prize. They venture to suggest, that at future Exhibitions, the rules may be modified so as to allow greater freedom to Committees on Musical Instruments; and that the results of so many years of experience, the products of so much skill and taste, be not put on the same plane with purely mechanical works, such as every household contains. And as the principles of justice as to awards are of no day or time, they respectfully urge that the Executive Committee will consider the matter at the present Exhibition; and they would request the government to grant a Gold Medal for the best Grand Piano-Forte to Messrs. Chickering & Sons, instead of the first Silver Medal awarded; a Gold Medal to Messrs. Mason & Hamlin for their Cabinet Organs, in place of the Silver Medal; and a Gold Medal to Messrs. Hallett, Davis & Co., for the marked improvement in all the Piano-Fortes exhibited by them—this last to take the place of the Silver Medal awarded for their Grand Piano-Fortes.

F. H. Underwood.
Chas. J. Capen.
H. Ware.
Geo. W. Harris.
E. L. Holbrook.

William H. Goodwin.
Geo. J. Webb.
Stephen R. Clapp.
Carl Zerrahn.

FINE ARTS AND PENMANSHIP.

JUDGES:

Benjamin P. Shillaber, Frederick U. Tracy,
H. E. Maynard, Henry D. Morse,
John Howarth.

The Committee on Fine Arts, in presenting their Report, are constrained to say that but little meriting the distinctive name has been found in their province, the artists, for some reason or other, having failed for the most part to avail themselves of the opportunity to appear in the Exhibition. This, they deem, is greatly to be regretted, as works of art have previously formed a prominent and graceful feature in like Exhibitions, and have admitted of a judgment concerning the progress of art among us, under judicious and kindly encouragement. Painting, in this, has been superseded by Photography, and Sculpture appears but by a few meagre representatives. Interested strangers, attracted by the portentious title of "Department of Fine Arts," might look almost in vain for examples in the Exhibition, and be led, doubtless, to form invidious or unjust conclusions regarding the status of art in our community, which should, from its olden reputation for taste and the acknowledged excellence of its artists, excel in its representative displays.

The Committee, therefore, would especially recommend, at this outset of their Report, attention, at future Exhibitions, to the securing of works of art for premium, offering such inducements as stimulants to competition as may be advisable, and thus present a display that must prove creditable to art, and the institution that fosters and encourages it. They would suggest that the Rotunda, so admirably adapted for an Art Exhibition, should be especially reserved for this object, which would give to artists a field for display that they would readily improve, and furnish a gallery that would be valuable as a feature of the Exhibition and instructive as a demonstration of comparative art. Instead of that which formerly belonged to the province of Fine Arts, a multitude of small matters have been placed under the charge of the Committee, that, though tasteful and elegant in many respects, should, they conceive, rather have been committed to the Judges of Fancy Goods; but they have, nevertheless, patiently attended to their duties, and are prepared to give the result of their examination. Though many of the articles may have excited the question of "What good?" and regret crept in that so much time should be squandered on seemingly worthless objects, they have been recalled by the reflection that beauty has its use and may express the highest form of utility, and that patience does its perfect work in preparation that may be invaluable as discipline. To reject or slight such, therefore, on the ground of inutility, would place us in the category of the very practical man who thought Moore's Lalla Rookh was written pretty well, but what did it prove? Where articles of the same description have been brought into competition, the Committee have studied faithfully to give the right award, unswayed by any consideration of personal regard, or any desire but that to do exact justice by all. They have omitted no opportunity to recognize any improvement or indication of latent or expressed genius, and in the awards recommended they have, they believe, done the best for the reward and encouragement of effort manifest in the various specialties passed upon.

PHOTOGRAPHY.

Much care was taken to decide between the several claimants, of which quite a large number had entered the lists for competition, with more or less pretension. As a good photograph is sometimes the result of accident rather than art, improvement was made the standard of judgment. In this direction the attention of the Committee was called to the elegant porcelain pictures exhibited by Messrs. Black & Case, which, though properly coming under the head of "Photographs," were so especially marked as improvements that in their judgment they were worthy a distinct place, and to be regarded as new discoveries in the art. So perfect are they, it would seem that art in their production could go no further. The Committee, upon investigation, find that prior to 1861, Mr. J. W. Black (now Black & Case,) experimented with and produced pictures upon white glass, (porcelain,) and that he, some year or so subsequently, in conjunction with a gentleman of Boston interested in the matter, procured (by a considerable guarantee to induce glass-makers to attempt its manufacture,) the first glass made in this vicinity and used in the production of these pictures, which have grown from but a moderate beginning to the most exquisite perfection. The porcelain transparencies were the first fruits of Mr. Black's experiments, and were developed in the camera; the present are taken in the same manner as the Photograph, from a negative. Mr. Black claims that he was the first to introduce these pictures and give them a commercial value, and has submitted evidence to this effect deemed sufficient by the Committee to warrant his claim, and therefore they recommend for this, so valuable and meritorious (see instructions to Judges) an improvement, a

Gold Medal.

1171. Bierstadt Brothers, *New Bedford.* Stereoscopic Views. Very fine, round and distinct, with a clear atmosphere; the absence noted of the glaze that too often mars the merit of like views taken here.

Bronze Medal.

1290. Black & Case. Photographs. For strength, distinctness, and general artistic effect, these excel, showing marked improvement and progress. In large and small pictures the merit is equally discernible, admitting of no question regarding "superiority of workmanship." A box of Stereoscopic Views of the Fair are likewise very meritorious. Considering all, the Committee recommend the second award of a *Silver Medal.*

1322. T. R. Burnham. Photographs. Bold and strong pictures, showing much ability in the manipulation, especially the full size picture of Edwin Forrest. *Diploma.*

1335. Samuel Masury. Colored Porcelains. Very fine. *Bronze Medal.*

1384. A. Sonrel. Photographs, well executed. *Diploma.*

1420. Getchell & Browning. Specimens, limited in number, but showing good execution.

1473. George H. Drew. Photographs. Several fine specimens of out-door scenes.

1477. Augustus Marshall. Photographs and Porcelains. The few specimens exhibited of the latter, finely executed. The finished Photographs creditable. *Diploma.*

1512. Fuller & Smith. Photograph Cards, good. *Diploma.*

1513. Edward L. Allen. Photographs. Several crayoned, full size heads finely done. Cards very elegant. A Photograph of the great Organ, taken by reflected light in a manner to show the base of the instrument, the Committee esteem a work of especial excellence hinting at new developments in the Photographic art, and worthy of encouragement. They, therefore, recommend the award of a *Bronze Medal.*

1516. R. J. Chute. Photographs. Cards very finely done. *Diploma.*

1520. John P. Soule. Stereoscopic Views and Copies of Works of Art. The latter highly meritorious. *Diploma.*

1574. John A. Whipple. Photographs. A very large and handsome display of specimens in the various departments of the Photographic Art, testifying to the industry and skill of the artist. Judging, however, by the standard of improvement, the Committee see little in his exhibition beyond the merit that has ever characterized Mr. Whipple's work, and which received a Silver Medal at the last Exhibition. Therefore, while approving that award they feel hardly warranted in recommending another, which, unless of equal magnitude, would not be either complimentary or acceptable to him, and confine themselves simply to commendation.

G. M. SILSBY. Two fine full-sized Pastille Portraits, worthy of especial commendation as highly meritorious specimens of this branch of art.

1671. GEORGE L. D. BARTON. A box of Stereoscopic Views. Very creditable. *Diploma.*

1676. JOSEPH L. BATES. Case of Stereoscopes and Views. These Stereoscopes, though belonging of right to another Committee, have received the attention of that on Fine Arts. They consist of improvement on the instrument invented by Dr. Holmes—the valuable hand instrument, with a graduated focal range, rendering the view available to every phase of vision, and hence are worthy of the warmest approval, presenting as they do, the full beauties of the Stereoscope to every one. Their mechanical execution is excellent. The Views are very superior; the instantaneous ones being remarkable for distinctness. *Bronze Medal.*

WAX FLOWERS.

The Committee have endeavored to discriminate as far as possible betwixt the genius and talent manifested in the production of these flowers, in making their awards, deeming them due more particularly to the former—the creative ability. It is a source of gratification that so much attention is paid to this pleasing accomplishment of wax flower making, which is so easily attained, and the Committee cannot but speak in terms of almost universal praise of the superior merit displayed in the specimens exhibited, that, though not warranting an award, are nevertheless creditable to the fair executers. They would recommend the following awards:

1069. Mrs. CHARLES PARKER, *Framingham.* Wax Wreath. Very fine.

1084 to 1086. Miss ANNIE B. FAY. Specimens of Wax Flowers. Superior, not from the fact of their being the result of but a few hours' instruction, but from their neatness of arrangement and general fidelity to nature. *Diploma.*

1122. Miss A. BENNETT, *Lawrence.* Wax Fruit. Very natural.

1403. Mrs. LULA MULLIKEN. Wax Flower Basket. Very beautiful.

1643. Miss MARIA F. GORHAM, *Boston.* Wax and Evergreen Funereal Wreath. The most tasteful and elegant thing among the Wax specimens, revealing in its make a very correct appreciation of nature and an eye to judicious adaptation. The Committee, therefore, recommend for this a *Bronze Medal.*

1035. Miss A. A. Hinkley. Wax Ornaments. Very delicate.

MISCELLANEOUS.

1100 and 1109. John J. Cornikinq. Fruit Piece in pastille, well done for the description of drawing. But very few specimens were presented worthy of consideration, the above described being the best excepting those mentioned in connection with photography.

1628. Mrs. M. J. Spare. Water-colored Photographs well executed.

1465. Miss Nellie B. Russell. Water-colored Flowers. Very good.

1020. H. Day, *Boston.* Table Top and Flowers—painting on glass. Very well done.

1617. Mrs. Henry Cutter, *Winchester.* Shell Wreath. Very fine.

1387. Cyrus Story, *Gloucester.* Pressed Flowers. Colors well preserved.

1403. Lula Mulliken, *Boston.* Feather Flowers. Very elegant.

1578. Mrs. S. R. Springer, *Boston.* Beautiful specimens of Decalcomania, the pursuit of which affords a pleasant pastime, not requiring much study, or an eye for art.

1499. Mrs. Jeremiah French, *Bangor, Maine.* Bead-work Wreath. Ingenious and elegant.

1591. Miss Anna Story, *Cambridge.* Water-colored Painting. Very well done.

1045. Miss Camococne Panscumoeskey, a Penobscot Indian. A Basket Work-stand. Elaborate and beautiful. *Diploma.*

1182. Mrs. H. W. S. Cleaveland. Skeleton Flowers. Several beautiful specimens.

PENMANSHIP.

The Committee have considered the several specimens committed to them, both as individual performances, and as representing "systems." Ornamental penmanship has presented many claims to consideration, and several meritorious specimens of this kind have received their attention.

1165. Henry F. Whitney. An Insurance Card, wrought with a pen. Very superior.

1164. John S. Sharp. Ornamental Penmanship and Show Cards. Well done.

1227. Bryant, Stratton & Co. Specimens of Commercial and Ornamental Penmanship. The former illustrate the "Spencerian System" taught in the Commercial College of which these gentlemen are the originators and conductors. The Committee, though ready to express their approval of its graces, are nevertheless free to say that they do not admire it for commercial books so much as systems that affect less flourish, and confine themselves to neatness and distinctness. Their work, however, does full justice to the system they illustrate, and the Committee recognize in the specimens of all kinds exhibited a skill that is worthy of all praise. The portrait of John Brown, "executed with a pen," and an imitation of the signers of, and signatures to, the Declaration of Independence, are creditable instances of pen drawing. The specimens of Penmanship exhibited, wrought by several hands, well illustrate the uniformity of instruction practised in their college, which is worthy of commendation. *Diploma.*

740. Crosby & Ainsworth. Payson, Dunton & Scribner's System of Penmanship. This appears to be the most practical system taught, combining all desirable elegance, neatness and distinctness. It is the system taught in our schools, and it is commended by its simplicity and adaptability to commercial and business purposes. The Committee recommend, as a recognition of its merits, a *Bronze Medal.*

1342. Charles H. Folsom. Penmanship. Very fine. *Diploma.*

1263. H. C. Kendall. Several specimens of elegant Penmanship, which are measurably open to the objections presented in the above, yet possess beauties that make criticism kind. The Committee recommend a *Diploma.*

1273. S. S. Woodcock. Architectural Drawing. Creditable.

PRINTING AND ENGRAVING.

1291. William O. Tinkert. Engraving. Superior.

1098. J. H. Daniels. Engraved Coat of Arms. Very well done.

CAMEOS AND MEDALS.

527. John C. King. Cameos. These exquisite specimens of art deserve some award that shall attest the Society's appreciation of the present, and encourage the artist in any future, effort. They therefore end the award of a *Silver Medal.*

69. HENRY MITCHELL. Medals and Seals. Admirably done, revealing artistic taste and great mechanical skill in their execution.
Silver Medal.

MODELS AND MEDALLIONS.

854. D. MORGAN, *Chillicothe, Ohio.* Medium-sized Bust of President Lincoln.

821. VINNIE REAM. Bust of President Lincoln, and Indian Girl.

927. WILLIAM MILLER, *Providence.* Bronze Medallion Busts, taken from life. Elegant work, by a new process, for which a patent is asked. The likenesses are admirably preserved, and do credit to art and to the subject. The Committee recommend for this invention, which has never before been submitted for premium, and which seems to them the dawn of a great idea in art, a *Gold Medal.*

MINERALS.

852. A case of Colorado and California Minerals. Though not able to make award for that which cannot come under the head of Mechanics or Art, the Committee cannot help expressing their own thanks, and, they feel, those of the public, for the opportunity of seeing the finest Cabinet of Minerals it was ever their privilege to look upon; their thanks also for the interesting description of the same by the proprietor, whose knowledge of the resources of the Great West was not more clear than his ability to demonstrate it.

440. LUTHER W. CLARK. Fine Copper and Silver Ore from Lake Superior.

PAINTINGS.

1569. GALLERY OF DECEASED HEROES. These pictures are for the most part, or entirely, colored photographs, and though several of them are well painted, they may be regarded, for the object which they illustrate, rather than for any claim they present as works of art. They attracted much attention, and were admired by the thousands who visited the halls. The exhibitor is a foreign gentleman, who has given himself enthusiastically to the object of preserving, in this durable form, the memory of those heroic men who gave themselves to their country in the late fearful struggle, and therefore the public have an interest in the work from a grateful sense of its importance. It is to be hoped that he will receive that attention from an appreciative public which his industry and skill most certainly merit. The Committee, however, conceive it to be beyond their province to award a premium for an "object,"—though they would, if consistent with the rules of the Association, most cheerfully do so in this instance—and therefore recommend the subject to the Executive Committee.

The Committee on Fine Arts, in closing their Report, can recall nothing that they have overlooked worthy of note, having respect for Art, and a careful review of their awards shows them no one that they would reverse.

PRINTING, BINDING AND BOOKS.

JUDGES:

Nathaniel B. Shurtleff, Lucius A. Chase,
Howard M. Ticknor.

The Committee on Printing, Binding and Books, having made a thorough examination of the articles submitted for their inspection, present the following Report, and recommend the within mentioned awards.

In order to give the greatest possible encouragement to those persons who have placed their articles in the Exhibition, the Committee have endeavored, as far as practicable, to avoid awarding high prizes to individuals for specimens which have received such considerations at previous Exhibitions, unless for improvements of great practical utility since made.

A large variety of articles have been presented for examination, and the Committee, after a patient investigation of their merits, have been led to the conclusions herewith submitted. It is to be regretted that several departments connected with Printing and Book-binding have not been represented in the Exhibition. With the exception of several cases of Cards and Card-board, there have been no specimens whatever of Printing Paper; nor have any articles of Printing Ink been on exhibition. These, although not showy, are of extreme importance in producing good work and excellent specimens of typography. Only a few specimens of Books have been presented for their typography, which is not as it should be, while Massachusetts so largely abounds in excellent printing establishments. Notwithstanding these omissions, the work exhibited was such as to prove that the art has not deteriorated since the last Exhibition. The books generally shown have been such as are of every day appearance on the shelves of the best Booksellers. The same remarks are equally applicable to the department of Book-binding. More than usual competition seems to have arisen in the article of Hand Stamps, and several specimens of great merit have been on exhibition.

The Committee desire to have it expressly understood that no articles of foreign manufacture met with any consideration in their examinations, it having been understood by them that such specimens of work were entirely out of place in an Exhibition having in view the encouragement of domestic talent and industry.

The following comprises a list of articles which have been exhibited in the department confided to your Committee, and also the awards respectfully recommended by them.

1150. OLIVER J. RAND, *Boston.* Case of Printed Books, as specimens of library binding. The books are strongly and thoroughly bound, and a portion of them are elegantly finished. For the excellence of the binding, the Committee recommend the award of a *Bronze Medal.*

1356. J. E. TILTON & Co., *Boston.* Case of Printed Books, well printed and bound, and attractive in appearance. A fair specimen of the books to be found upon the counters and shelves of this firm. For general excellence in Book-making, a *Silver Medal.*

1412. BROOKS & BURGESS, *Boston.* Case of Printed Books, "The Life, Speeches, &c., of President Lincoln," bound in various styles for table and library purposes. The printing and binding are in good taste.

1531. WILLIAM W. WHEILDON, *Charlestown.* Two copies of his Memoir of Solomon Willard, the architect of the Bunker Hill Monument. This work reflects much credit upon the author, who was also the printer, a large portion of the work having been composed by him at the case, and the facts collected by him at his leisure moments when relieved from the cares of business. The Memoir is full of matters of interest and information.

1318. WALKER, FULLER & Co., *Boston.* Case of Printed Books, all well printed and in a variety of attractive bindings, reflecting great credit to the publishers.

438. JOHN A. LOWELL, *Boston.* Two frames of Engravings and Stationery from his own original designs. All very creditable to the designer and exhibiting great taste. The Committee recommend a *Silver Medal.*

1471. F. RICHARDSON, *Boston.* Two Lithographs from an original drawing, representing a view of Boston and vicinity, including Boston Harbor, as viewed from Corey's Hill in Brookline. An exceedingly interesting sketch, well executed, with a key to the objects presented. Worthy of a *Diploma.*

299. J. MAYER & Co., *Boston.* Specimens of Lithography, well drawn and printed. Deserving of a *Bronze Medal.*

222. GEORGE B. WATSON, *Boston.* Four frames of specimens of Color Printing, exceedingly well done. The Committee recommend a *Diploma.*

564. George Coolidge, *Boston.* Case of "Lady's Almanac," containing many copies in various styles of binding. This little volume has been produced in a handsome and attractive style, contains useful information, and is handsomely illustrated with engravings neatly printed in colors.

565. George Coolidge, *Boston.* Catalogue and Journal of the Exhibition. Exceedingly valuable as guides to the show, and good advertisements on account of their wide circulation. For the Almanacs, Catalogue, &c., the Committee recommend a *Bronze Medal.*

224. N. S. Dearborn, *Boston.* Specimens of Card Engraving, neatly executed in various styles.

234. J. P. C. Marshall, *Boston.* Three frames of hand-made Show Cards. A popular article, skilfully and tastefully executed, and worthy of a *Diploma.*

269. H. F. Bond, *Waltham, Mass.* Writing Machine for the Blind. A simple and useful instrument, deserving of a *Diploma.*

545. A. Holland, *Boston.* Four frames of Wood-Cut Printing in Colors. The work peculiarly adapted for labels. Very neatly executed, and worthy a *Bronze Medal.*

220. Edward A. Curtis, *Boston.* Two Gordon Printing Presses of improved construction; one a quarter-medium Press, and the other a bill-head Press. At the Exhibition in 1860 these Presses were deemed worthy of a Silver Medal. Since that time, improvements which give them a superiority over all other similar Presses now in use, and which consist in firmly fixing the platen of the Press during the impression, and in better distributing the ink upon the rollers, entitle them again to special consideration. The Committee, therefore, recommend for the improvements a *Silver Medal.*

11. F. S. Coburn, *Boston.* A Labelling Machine for Publishers' use. A very ingenious and useful article, being one of the labor-saving machines of recent invention, but not superior to others in use.

46. John Preston, *Lowell.* Copper Stamps, Stencils and Block Cuts. Excellent articles, well made, and useful in their way. Worthy of a *Diploma.*

115. American Tract Society, *by* Nicholas Broughton, Jr., Agent, *Boston.* Case of Printed Books. All neat, and many remarkably well printed and bound. A handsome show.

118. J. E. Farwell & Co., *Boston.* Case of Printed Books. printed extraordinarily well, and bound with much taste. typographical execution of these books is highly creditable,

and far exceeds that of any others in the Exhibition. The Committee recommend the award of a *Silver Medal.*

139. G. W. Haselwood, *Boston.* Case of Chasing, Die-Sinking and Mould-Making. An exhibition of much merit as to workmanship. Deserving of a *Diploma.*

181. William Carter & Brothers, *Boston.* Case of Ink and Mucilage. The Inks are of excellent quality—black, red, blue and copying; and the Mucilage well answers its purpose. Deserve a *Bronze Medal.*

242. Peter C. Jones & Co., *Boston,* Agents for Smith & Peters, *New York.* Fancy Printing Cards of neat appearance and of good quality. A similar assortment of specimens received the award of a Bronze Medal at the Exhibition of 1860, and there being no deterioration from those formerly exhibited, and a greater variety of kinds being presented, the Committee recommend that the award be a *Diploma.*

260. William H. Smith, *Boston.* Case of Seal, Die and Letter Cutting. Impressions of a great variety of Bank and Notarial Seals, exhibiting good workmanship. Various specimens of Die and Letter Cutting. In 1844, Mr. Smith, while a youth, presented very meritorious work on exhibition. *Bronze Medal.*

273. Phelps & Dalton, *Boston.* Case of Printing Type, Electrotype and Printing Materials. An excellent collection, exhibiting the capability of a large type foundry. In a condensed way, the principal requisites of a printing office are collected together for exhibition. The specimens are all remarkable in their way, and are deserving of a very high consideration. The Committee, therefore, recommend the award of a *Silver Medal.*

282. Dodge & Power, *Boston.* Case of Letter Cutters. These articles are of excellent quality, and are deemed worthy of a *Bronze Medal.*

307. W. J. Johnson, *Newton.* Wages Calculator. An ingenious instrument, formed by a moving cylinder within a cylindrical case, by which calculations can be easily arrived at. The Committee deem it worthy of a *Diploma.*

315. Collins Brothers, *Boston.* Case containing a large Blank Book, very elaborately ruled, for which the Committee recommend a *Bronze Medal.*

354. William H. Tyler, *Boston.* A frame of colored Wood Engravings. Very neatly executed and well suited for labels.

355. J. H. BUFFORD & SONS, *Boston.* Samples of Lithography and Colored Printing. Most of the specimens are of great beauty, and all are of the highest grade of the several styles of work. The chromo-lithographs are particularly worthy of attention, being of a style introduced by Mr. Bufford in this country, and much improved by him. The Committee believe that the great excellence attained in this department of art, and the introduction of new principles in lithographic printing in this country, fully entitle Mr. Bufford to the highest award, and therefore recommend a *Silver Medal.*

357. T. R. MARVIN & SON, *Boston.* Two Frames of Wood Cut and Color Printing, and Labels for Dry Goods. These specimens are well executed, and although few in variety and number, are worthy of much commendation and a *Diploma.*

458. SECCOMB & CO., *New York.* Ribbon Hand Stamps, Holt's Patent. A considerable variety of very useful instruments, particularly valuable for the use of stationers, and in banks and public offices. The Committee recommend for these a *Silver Medal.*

395. L. PRANG & CO., *Boston.* Case of Albums and Frames of Lithographs. This contributor exhibits a great variety of work in Colored Lithography, exceedingly well done, some of it elegantly. The Committee, therefore, adjudge him deserving of a *Bronze Medal.*

456. DODGE & LEAHY, *Boston.* Specimens of Frames and Albums. Good, serviceable articles.

511. CHASE & CONANT, *Boston.* A Book Sprinkler. An ingenious instrument for book-binders' use, for sprinkling the edges of books.

534. T. S. HUDSON, *East Cambridge.* Case of Ribbon Hand Stamps, and Ink Stands. Both useful and convenient articles of every day use. The Stamp can be altered for use, from day to day, with the greatest ease and readiness, without taking the instrument to pieces. Once a month the change is similar to that required daily by other instruments constructed for the same purpose. This, in the opinion of the Committee, is worthy of a *Bronze Medal.*

555. PARSONS & GIBBY, *Lowell.* A case of Copper Stamps, constructed for printing labels on pieces of cotton, &c. This is a useful article for the manufacturer, and is well deserving of a *Diploma.*

578. S. S. C. RUSSELL, *Boston.* Several frames of Wood Engravings, consisting of nicely executed book illustrations, cuts for labels, and views of machines and stoves, &c., from wood cuts engraved from photographic drawings, taken upon the blocks. A very fine portrait, being a a wood cut to print from, adds much to the variety of specimens pre-

sented by this artist. The Committee recommend for the work presented a *Bronze Medal.*

582. S. S. KILBURN, *Boston.* Two frames of nicely executed wood engravings, which keep up the reputation already acquired by this well known artist. These specimens of work are considered deserving of a *Bronze Medal.*

603. J. W. WILCOX, *Boston.* Copper-face Dresser Roller, and various specimens of large Electrotyping. The specimens are well made, as are all the different articles usually submitted for exhibition by this skilful and pioneer artist in electrotyping. Similar specimens have been before exhibited, and in 1860 received a Bronze Medal. In recognition of the continued improvement in his peculiar department, the Committee recommend the award of a *Diploma.*

665. G. H. SANBORN, *Boston.* A Bookbinder's Standing Press and two Embossing Presses for stamping covers and backs of books, &c. These are useful articles and the best of their kind, and the Committee recommend the award of a *Bronze Medal.*

670. ALFRED MUDGE & SON, *Boston.* Specimens of Job Printing. A large variety of well executed printing, in the department in which this firm is unrivalled. This firm having had a Silver Medal in 1860, it would seem unnecessary to award anything further.

703. THOMAS GROOM & CO., *Boston.* A case of Account Books. A large variety of well executed specimens of blank books, exhibiting an extraordinary display, of excellent taste and good workmanship. Although this firm have at previous Exhibitions received high awards, the Committee, in consideration of new marks of excellence, recommend the award of a *Silver Medal.*

716. JOSEPH HENDERSON, *Boston.* Specimen of Card Signs. This neat article, painted by hand upon card-board with a black shining paint, is remarkably neat and worthy of commendation.

776. ANTHONY HARDY, *East Cambridge.* Hand Stamp. An ingenious instrument.

769. GEORGE B. SARGENT, *Boston.* Patent Envelope Press. This is for embossing names upon the back of envelopes after they have been manufactured, without printing through more than one thickness of paper. *Diploma.*

850. J. P. C. MARSHALL, Agent for JOHN ROBINSON, *New York.* Case of specimens of Cards and Card-board. The articles are of good quality and the printing in good taste. *Diploma.*

312. **William Nelson**, *Boston.* Stereotype Castings from *Papier-Maché* Moulds. Plates cast in this manner are of value in proportion to their excellence. The process is cheaper and more expeditious than the usual stereotype and electrotype processes; and consequently is in many cases a useful invention. Although this mode of stereotyping is not new, it has not yet acquired the perfection which the Committee think it will under the able superintendence of Mr. Nelson.

854. **J. M. Whittemore & Co.**, *Boston.* Case containing Tourists' Cases. A very convenient article for travellers, as it has already been for the soldiers of the volunteer army. In a condensed form it contains the writing material and other small conveniences required by the traveller.

401. **Boston Stereotype Foundry**, by **D. W. Rogers**, Agent. Specimens of Plates, prepared by various processes, for printing, and articles electrotyped for printing purposes. Among these are exhibited the plates of a work purporting to be the first book printed in America from electrotype plates. These now perform good work. The plates used in printing Worcester's and Webster's great dictionaries are particularly worthy of notice. The Committee recommend the award of a *Silver Medal.*

56. **H. H. Herrick**, *East Boston.* Architects' and Accountants' Level and Index Ruler. A useful and very convenient and correct instrument, adjudged to be worthy of a *Diploma.*

54. **Tarbett & Bang**, *Boston*, by **Alfred Mudge & Son**, *Boston.* Printing Press. The old Ruggles' Bill-Head Press with several modifications and changes. *Diploma.*

654. **F. L. Bailey**, *Boston.* Two Printing Presses. One an improvement on the Ruggles press, and the other a Card-press of new construction. *Bronze Medal.*

783. **S. E. Blake**, *Boston.* Printing Press manufactured by Samuel Orcutt, Chelsea. This Press is well-known to printers and is capable of good work expeditiously done.

767. **John Axtman**, *East Cambridge.* Patent Ink-Stand. An ingenious article, very convenient in opening and closing; suitable for schools and for family use.

ORNAMENTAL AND PLAIN NEEDLE-WORK.

JUDGES:

Mrs. S. T. Hooper,
Mrs. John Wallace,
Mrs. William Marble,
Mrs. C. B. F. Adams,
Miss Emma J. Standish,
Mrs. N. J. Bradley,
Mrs. W. F. Dalton.

The Committee on Needle-Work, Embroidery, &c., in submitting their Report, beg leave to state that although in the examination of the articles submitted to them, they have occupied more than the specified time, within which it was desired this Report should have been made, yet they regret the field is so small, that there is not much to be said. Although the number of articles on exhibition under this head is considerable, yet there is very little variety and very little novel or original in character. The Committee have used their best judgment in the matter and have endeavored to act impartially.

The following is a list of the articles examined, very few of which deserve more than a passing notice:—

1005. Mrs. Lydia Gough, *Cambridgeport, Mass.* Silk Quilt. Very neatly done for an old lady of 98 years, and worthy a *Diploma.*

1011. Mrs. Charles L. Goodnow, *Boston.* White Knit Quilt. Neatly done.

1012. Mrs. M. A. Wakefield, *Boston.* White Knit Quilt. Beautifully done. *Diploma.*

1013. Mrs. Lyman Boynton, *Boston.* Sofa Cushion. Neat and with taste. *Diploma.*

1015. Mrs. B. K. Conant, *South Boston.* Bed Spread. Remarkable for its antiquity, having been made in the year 1714.

1028. Mrs. G. H. Simonds, *Boston.* Ottoman Cover. Nicely done.

1030. Miss Julia Owen, *Boston.* Chair Bottom. Evenly done.

1038. Mrs. Alonzo Burke, *Dorchester.* Crochet Quilt. Large size and beautifully executed.

1044. Mrs. H. C. Blake, *Boston.* Sofa Pillow. Very neatly made.

1047. Mrs. M. B. Hoadley, *Roxbury.* Knit Quilt. Beautifully done.

1053. Mrs. F. A. Bell, *Boston.* Union Bed Quilt. Very original and curious.

1055. Miss Alma L. Davis, *Boston.* Case Lace Work. Beautifully done. *Diploma.*

1067. Mrs. E. J. Homer, *Charlestown.* Knit Quilt. Evenly done.

1074. Mrs. Charles W. Smith, *Boston.* Worsted Picture in Frame. Subject, "Christ at the Well." Superior work. *Bronze Medal.*

1081. Mrs. M. W. Halstram, *Boston.* Knit Quilt, Large size. Neatly done.

1088. Mrs. Anna M. Walker, *Cambridgeport.* Ottoman. Made by a lady 76 years old. *Diploma.*

1101. Mrs. S. E. Young, *South Boston.* Lady's Skirt. Very nicely done.

1112. Mrs. William S. Ellerson, *Boston.* Two Worsted Shawls. Beautifully made.

1115. Anna M. S. Rossiter, *East Boston.* Diamond Silk Quilt. Tastefully and neatly made. *Diploma.*

1118. Miss Sarah Emmerson, *Charlestown.* Silk Quilt. Very handsome.

1121. Miss Susan L. Cooper, *Charlestown.* Worsted Picture. Neatly done.

1128. Mrs. Jerusha Wiley, *South Reading.* Knit Quilt. Very fine, and exquisitely done. *Diploma.*

1134. M. M. Gardner, *Dorchester.* Three Crochet Tidies. Very neatly made. *Diploma.*

1135. Mrs. M. L. Fuller. Two Chair Covers. Neatly made and much admired.

1136. William H. Doolittle, *Boston.* Quilt. Beautifully made by a boy seven years of age. *Diploma.*

1141. Mrs. G. H. Fultz, *Charlestown.* White Knit Quilt. Neatly done.

1156. Mrs. S. D. Hayward, *Boston.* Crochet Tidy. Beautifully done.

1158. George A. Parker & Co., *Somerville.* Patent Clasps. New invention. *Silver Medal.*

1161. Mrs. O. L. Fuller, *Charlestown.* Chair Bottom Cover. Neatly made.

1189. Mrs. Ann Vandusen, *Charlestown.* Knit Quilt. Unusual pattern, and very neatly done. *Diploma.*

1206. Mrs. J. C. French, *Longwood.* Housewife. Beautifully made. *Diploma.*

1208. Edward A. Vose, *Boston.* Silk Quilt. Very neatly and tastefully made by a gentleman (cripple,) fifty-two years old. *Bronze Medal and Diploma.*

1226. Mrs. S. Stanwood, *Boston.* Thread Edging. Very neatly done.

1227. Mrs. J. S. Saul, *Boston.* Quilt. Shows patience and industry.

1247. Mrs. William J. Stevens, *Boston.* Worsted Picture. Pastel Painting and Hair Wreath. For one of them a *Diploma.*

1252. Mrs. J. M. Thresher, *Cambridge.* Afghan. Beautifully designed and executed.

1258. Mrs. W. J. Neff, *Boston.* Corsets. Superior fit and workmanship. *Diploma.*

1277. Miss S. Godbold, *Chelsea.* Worsted Tidies. Neatly done.

1301. Maria M. Lindsay, *New Bedford.* Embroidered Handkerchief. Beautifully done. Excellent imitation French work. *Bronze Medal.*

1317. Mrs. A. H. Jennings, *Boston.* Lace Collar. Pretty design, and neatly made. *Diploma.*

1329. Miss S. J. Appleton, *Roxbury.* Embroidery. Beautifully done. *Diploma.*

1334. Mrs. S. Batchelder, *Boston.* Knit Quilt. Very well done.

1338. Mrs. S. T. White, *Boston.* Embroidered Handkerchief. Very neatly done.

1341. Mrs. E. A. Murdock, *Boston.* Case of Worsted Articles. Mrs. M. sustains her former reputation, and for her beautiful Afghan deserves a *Bronze Medal.*

1345. Mrs. S. T. Danforth, *Cambridge.* Embroidered Chemise Yoke and Sleeves. Exquisitely made. *Bronze Medal.*

1346. Mrs. J. O. Carter, *West Cambridge.* Silk Quilt. Nicely made.

1351. Miss E. Holland, *Boston.* Knit Quilt. Neatly made.

1370. Mrs. A. L. ATWOOD, *Boston.* Bonnets and Hats. Much taste displayed.

1374. Miss SARAH PETERS, *Cambridgeport.* Quilt, tastefully and neatly made. *Diploma.*

1377. Mrs. C. D. STEVENS, *Boston.* Embroidered Flannel Skirt. Beautifully done. *Diploma.*

1389. Miss M. A. SARGENT, *Newburyport.* Quilt. Curious and pretty.

1392. Mrs. W. WARREN, *Newton Corner.* Fire Board. (Worsted.) Pretty design and neatly done. *Diploma.*

1397. Mrs. S. A. FULLER, *Chelsea.* Embroidered Skirt. Neatly done. *Bronze Medal.*

1399. Mrs. LIZZIE J. YOUNG, *Wilmington.* Quilt. Beautifully made. *Diploma.*

1402. Mrs. B. B. HARTFORD, *Chelsea.* Quilt. Neatly done.

1403. Mrs. L. MULLIKEN, *Boston.* Assorted Flowers. Beautifully made.

1414. Mrs. HORACE GOODWIN, *Hartford, Conn.* Bed Spread. Curious design and beautiful workmanship. *Diploma.*

1436. L. H. AMSDEN, *Boston.* Hats, Bonnets, &c. Neatly and tastefully made.

1444. Mrs. H. H. BENSON, *Concord.* Under Clothes. Very neatly done.

1446. E. HART, *Charlestown.* Silk Work in Chair. Neatly done. Much admired.

1450. Mrs. MARY GREENOUGH, *Boston.* Knit Work. By a lady ninety years old. *Bronze Medal.*

1453. ELLA LIVERMORE, *Boston.* Two Watch Cases. Elegantly made.

1462. Miss MARY F. MCNUTT, *Boston.* Picture. Blanket and Dress. Well done by a child of thirteen years. *Diploma.*

1463. Miss CAROLINE MCNUTT, *Boston.* Embroidered Dress. By a child eleven years old. *Diploma.*

1476. SAMUEL TILTON, *Boston.* Case Millinery. Bonnets neatly and tastefully made. *Diploma.*

1490. Mrs. E. A. BRACKETT, *Boston.* Quilt. Ingeniously and neatly made.

1500. Mrs. Fellows, *Cambridgeport.* Lace Work. Made by a lady eighty years old; remarkably well done and worthy a *Diploma.*

1508. Miss Ellen E. Porter, *Cambridgeport.* Patchwork. Pretty design. Neatly done.

1510. Mrs. C. H. Gavett, *Boston.* One Silk, one Crochet Quilt. Unique in design and elegantly made. *Bronze Medal.*

1515. Mrs. E. Bancroft, *Boston.* Worsted Picture. 303,600 stitches, showing great industry.

1528. Mrs. N. Bartlett, *Charlestown.* Afghan. Beautifully made. *Diploma.*

1529. E. W. Hunt, *Boston.* Worsted Bouquet. Nicely done. *Bronze Medal.*

1536. D. B. Saunders & Co., *Boston.* Corsets and Supporters. Superior workmanship.

1539. Miss M. M. Messer, *Manchester, N. H.* Gents' Slippers. Very handsome.

1554. Mrs. J. P. Lakeman, *Boston.* Specimens of Embroidery. Neatly done.

1555. Mrs. Mary Byrnes, *Boston.* Knit Tidy. Pretty and neatly made.

1585. Mrs. J. F. Bowers, *Boston.* Afghan. Tastefully and neatly made.

1592. Mrs. Rebecca King, *Lexington.* Afghan. Extra size. Very pretty.

1597. Miss J. S. Thayer, *Barnstable.* Tatting Work. Very neatly done.

1596. Miss M. R. Wilbur, *Watertown.* Afghan. Pretty design.

1605. Mrs. L. F. Barber, *Boston.* Baby's Dress. Beautifully made.

1625. Mrs. M. L. Riley, *Boston.* Quilt. Handsome pattern. Neatly made.

1630. Miss G. A. Nourse, *Boston.* Much taste displayed and neat workmanship.

1663. Miss G. W. Furbish, *Boston.* Afghan. Very handsome and worthy of notice. *Diploma.*

1584. Miss E. Flannagan, *Charlestown.* Worsted Picture. Unusually fine work, showing great patience and industry. *Bronze Medal.*

SHOE-TOOLS AND MACHINERY.

JUDGES:

N. P. Coburn, W. Fisk Claflin,
John H. Parker.

The Committee having the honor to act as Judges of Shoe Tools and Machinery, after a careful examination, beg leave to submit the following Report; and in so doing have to regret that, in an Exhibition of so much importance to the industrial interests of New England, there was no larger display of mechanical and inventive genius in the machinery for the manufacture of Boots and Shoes. This fact is not, however, attributable wholly to the lack of machinery, but that the manufacturers of Boots and Shoes are too busy in supplying the very active demand for their goods to devote their time to giving a "practical exhibition" of their machinery. Your Committee would respectfully recommend that, in future Exhibitions, each article of machinery should be so shown as to give the public a chance to view it in operation.

514. Brooks & Mecuen, *Boston.* Sand-Paper Machine. Rolling Machine. Upper Leather Skiving Machines. The above are very useful Machines, and too widely known to need any comment.

704. J. A. Safford, *Boston.* Splitting Machine. *Diploma.*

127. Butterfield & Haven, *Boston.* Wax Thread Siding Machine, with Welt Feed. Wax Thread Machine, medium size. Wax Thread Machine, small size. These Machines are indispensable to the manufacture of Boots and Shoes, but the Judges think there is an improvement on the Welt Feed. For the Siding Machine, a *Diploma.*

384. E. Townsend, *Boston.* New Era Pegging Machine. *Bronze Medal.*

Self-Feeding Eyeleting Machine. A very useful invention.

528. Jarvis Howe, *Milford.* Set of Men's, Boys' and Youth's Boot Trees. *Diploma.*

581. B. B. McDowell, *Boston.* Patent Sewing Jack. Useful for sewed work.

513. John D. Young, Jr. Boot Counter Cutter. Designed for cutting Counters from Strips or Races.

173. L. H. Wood, *Marlborough.* Self-Feeding Punch, with power. Self-Feeding Punch, without power. *Bronze Medal.*

293. L. D. HAWKINS, *Boston.* Feather Edge Machine, Godue's Patent, L. D. Hawkins, Agent. Bottom Levelling Machine, O. Gilmore's Patent, L. D. Hawkins, Agent. Sole Leather Cutter and Press, L. D. Hawkins, Manufacturer. Heel Burnisher, S. W. Chamberlain's Patent, L. D. Hawkins, Agent. Rolling Machine, L. D. Hawkins, Patentee and Manufacturer. Leather Splitting Machine, L. D. Hawkins, Manufacturer. The Machines contributed by Mr. Hawkins are worthy of commendation, and we cheerfully recommend them to the careful consideration of all manufacturers. Mr. Hawkins is entitled to many thanks for his arduous and successful exertions towards perfecting this important branch of machinery. *Bronze Medal.*

613. WILLIAM P. MARTIN. Leather Finishing, Rolling and Pebbling Machine. *Diploma.*

265. JOHN JENNINGS, Jr., *Natick.* Case of Shoe-Knives. *Diploma.*

182. C. W. BIAREN. Todd's Patent Circular Edge Key. *Diploma.*

179. D. HENDERSON, *Boston.* Shoe Patterns. The Brass Edge Zinc Patterns for Sole Leather, are an improvement on anything in the Exhibition.

849. N. C. STOW. Shoe Edge Burnisher. *Diploma.*

698. BRADFORD & BARBER. Patent Thread Feed. *Silver Medal.*

793. E. M. STEVENS, *Lynn.* Patent Sole-Forming Machine. *Diploma.*

501. O. M. ADAMS, *Milford.* Boot Crimping Screw. A very useful machine.

296. S. D. TRIPP, *Stoneham.* Edge Burnishing Machine, Shank Cutting Machine, Ran Splitting Machine, Stay Cutter Machine. The above Machines contributed by S. D. Tripp, are worthy of notice, more especially the Ran Splitter and Stay Cutter, to which we award a *Diploma.*

SLOCUM & PITCHER. Boots and Shoes. *Bronze Medal.*

898. IRA MERRITT, *Abington.* Extensible Shoe Knives. *Diploma.*

441. B. F. WALDRON. Boot and Harness Clamp. Used almost exclusively by harness makers, and is of great service.

250. S. K. TAYLOR & Co., *Boston.* Case of Dies. *Bronze Medal.*

890. N. C. STILES & Co. Toe and Instep Stretcher. Useful for tender feet.

138. W. H. KIMBALL, and Dr. BLETHEN'S PATENT, *Lynn.* Seam Pressing Machine. Said to be good in the manufacture of Rubber Boots and Shoes. The Judges think there might be some improvements made.

923. JOHN S. STEWART, *Lynn.* Heel Trimmer. *Diploma.*

418. WOODMAN & Co., *Milk Street, Boston.* Shoe Patterns and Buckles. *Bronze Medal.*

The Mechanic Arts Favorable to Liberty and Social Progress.

ADDRESS

BEFORE THE

Massachusetts Charitable Mechanic ASSOCIATION,

AT THEIR

TENTH EXHIBITION,

SEPTEMBER 20, 1865.

BY ALEXANDER H. BULLOCK.

BOSTON:
WRIGHT & POTTER, PRINTERS, No. 4 SPRING LANE.
1865.

BOSTON, October 5, 1865.

HON. A. H. BULLOCK:

Sir: At a meeting of the Government of the Massachusetts Charitable Mechanic Association, holden this day, it was unanimously voted that the thanks of the Association be tendered to you for your eloquent and appropriate Address, delivered before the Association.

It was also voted that a copy be requested for publication.

JOSEPH T. BAILEY.
W. W. CLAPP, JR.
A. J. WRIGHT.

WORCESTER, October 7, 1865.

Gentlemen: I have the honor to acknowledge the receipt of your favor of the 5th instant, apprising me of the vote of the Government of the Massachusetts Charitable Mechanic Association, and the request for a copy of my Address for publication.

I herewith send a copy, and will only add that I feel highly honored by this expression of their approval.

I remain, yours very truly,

ALEXANDER H. BULLOCK.

Messrs. JOS. T. BAILEY,
W. W. CLAPP, Jr.,
A. J. WRIGHT,
Committee, &c., &c.

ADDRESS.

Mr. President and Gentlemen:—

I congratulate the members of the Massachusetts Charitable Mechanic Association that with the return of peace the opportunity for resuming their periodical exhibition is restored under circumstances so gratifying. While the war lasted your seasons of ovation to the useful arts were indeed suspended amid the pathos and pageantry of arms; but the arts themselves suffered little abatement; rather they took from the excitations of the time new intensity to themselves, and repeated the lesson taught by other countries, that war periods are quite apt to quicken and invigorate the national genius. Accordingly, while the late conflict was raging, and all classes, all interests, all welfares were to some extent swept into its vortex, the records of the Patent Office prove that the inventive wits of the country kept steadily at their work under the highest tension, and the income list demonstrates, what we all knew before from our personal observation, that the mechanic arts and manufactures were reaping a golden harvest. Nay, even more than this, and pertaining to the rationale of our military success, these creative and constructive forces had not only prepared the free States for the war when it came, but they became themselves the nerves and sinews of the treasury which shares with the soldier the honors of victory. The glistening collection of ordnance which is parked in yonder hall,—let us hope not soon to be needed in the field,—derives its highest interest and largest instruction from the bright array of its peaceful companionship, the engines, the fabrics, the textiles, which almost seem conscious of their sovereignty amid martial implements and martial deeds.

But now it is that the war having subsided the arts assume once more their control in the State and sway all the classes and all the employments of men. We are soon to be *in statu quo ante bellum*,—a generation pushing the originalities of motive power and the artificial combinations of forces to the farthest verge of empire. This is an age and ours a country of mechanism. The mechanical arts, with which for all purposes of discussion manufactures are synonymous, bear the rule in our time. The prizes of fortune, which formerly fell almost exclusively to commerce, now alight more frequently here; and without these agencies agriculture would never have awaked from the sleep of the earlier periods. The institutions of education, without abandoning the classic fields, recognize and apply this fact; and Boston, as much a city of mechanics as of merchants, through her Lawrences, father and son, and more recently her Hooper, has conferred upon the neighboring university new and practical departments of contemporary power and lasting beneficence. And so I take up the condition as we find it, and for these remaining moments will consider THE RELATIONS OF THE MECHANIC ARTS WITH LIBERTY AND SOCIAL PROGRESS.

No lesson of modern history has been more clearly defined than that the growth of these utilities has been the herald of a larger freedom than was before enjoyed. It is difficult indeed, —so imperfect have been historical writers in their delineation of domestic custom,—to point out the exact connection which one improvement after another has borne with the general results; but we cannot recur to the record of those days in which manufactures, and commerce, which would be of little consequence without them, first caught the influence of the pulsations which started the people of Europe from their torpor, without becoming ourselves admiring witnesses of their quickening and regenerating effect upon the tyranny of a thousand preceding years. If we go back to what under our classification of periods is called the middle ages, we find that the institution of feudalism, half patriarchal and half military, held everything in subjection until artisanship, manufactures and trade loosed forever the chain and the grasp. The triumph at Runnymead, to which we are in the habit of referring the landmarks of freedom, was chiefly the success of feudal lords over a feudal crown; it brought but little of practical liberty to the nine-tenths of all, who still continued under a baronial despotism. It was not until the mechanic arts, few and small as they were, —manufactures, dawning faintly and at intervals in a long, dark period, dying out in one place only to take new life in another, —and commerce, depending upon these for its support, always sharing their fortunes, and keeping pace only with their progress,—had varied the broad dead level of the public condition, had liberalized the ranks above and quickened the masses below, had opened the way for the fusion of the social classes and penetrated their mutual relations with those aspirations which have beat higher and higher till now they control the Western nations,—that anything which can be called popular freedom had a genuine and transmitted existence. In the descent and diffusion of liberal ideas, in the promulgation of common rights, in the establishment of systems of justice and equity, towns and cities have proved to be the most effective agencies; but these have sprung up only in sympathy with manufactures and commerce. The mediæval landed proprietor conferred no such benefits upon the race; he held his artisans under the limitations of a quasi-white servitude, and for all the purposes of reforming social abuses and redeeming men from vassalage their relation was almost of as little value as that of the mechanics of Greece and Rome, who were slaves. If the annals of mankind chronicle anything with a point and a moral, it is that for centuries there were no considerable and enduring manufactures which were popular in their origin, popular in their uses, and popular in their relations. I allow that among the memorials of early time, partly rescued and partly entombed beyond our knowledge, there are sublime traces of lost arts. Wonderful to this generation, marvels to the modern science of mechanics, they loom out from Nineveh, and Babylon, and Jerusalem, and Egyptian pyramids, and later cities, even now under the process of exhumation, full of interesting disclosure to the antiquary and the scholar; but bringing little instruction as to the advancement and enfranchisement of the world, and scarcely coming at all within the circuit of the golden links which in our day bind the productions of genius and art to the welfare of human kind. They are splendid encomiums upon the skill of the past; but they furnish not much aid to the progressive lessons of our political economy which builds up Boston, and Lowell, and Lawrence, and Worcester, and infuses them with the springs of immortal life. Such a benign mission was reserved to a later period of popular arts. Those were feudal times, having an abundance of rural life, protected by the castle, the turret, and the portcullis.

In classifying the periods and the causes of the deliverance of Europe, a philosophical historian (Mr. Hallam,) has ascribed one of the first degrees of progress to the introduction of woollen manufactures into Flanders, nearly six hundred years ago. So magical was the effect that the wings of trade opened wide and far, that little district became a market of renown, and merchants from seventeen kingdoms, beside strangers from almost unknown countries, were domiciled in the inconsiderable capital of West Flanders that palpitated under the new dispensation of industry. How infectious are these examples! They spread immediately through the free cities of Germany, and wherever the most mechanical skill and production was developed, there the greatest civil liberty was enjoyed. England invoked the charm; and as if realizing the glory of the title which subsequent history has given to him, of the "father of English commerce,"—"a title by which he may claim more of the gratitude of his countrymen than as the hero of Crecy,"—her great Edward opened a stream of emigration from the manufacturers of the continent which continued to pour its life-giving influences into his realm for an hundred years afterwards. The commerce of the Baltic sprang into existence, and Northern and Southern Europe greeted each other for the first time in peace and on shipboard; ships of nearly a thousand tons astonished the god of the sea; maritime law and the law system of nations took form and expression; international comity and freedom rose to influence and respect; banks started into life, the repositories of so many hopes, and bills of exchange were invented, those fictitious cords which bind together remote nations in faith and confidence; the desolation of the wars of the roses was quickly repaired; manufactures and trade obtained a place in the statutes of Parliament, and from that day down they have swelled the volumes of its proceedings with the record of their fraternal progress, their equal beneficence, their indissoluble glory. Those who were engaged in these occupations became respectable before the law and began to assume an equality with the landed proprietor, for by a statute it was provided that an artisan or tradesman,—you will bear in mind that the two have travelled in company together on the same benevolent mission to the race and to its now conceded honors,—if possessed of real estate of the value of £500, should be permitted to dress himself like a squire of £100.

The struggle between arbitrary power and the rising classes was protracted in its duration and varied in its vicissitudes of success and defeat, but every generation brought it nearer to its termination. The hue of change was passing over the social condition, and the power of landholders was yielding to the free spirit of the towns. It was not in the tent, but in the workshop, that modern liberty was dreaming of her coming joys; it was not in Gothic halls, but in the marts of trade, that equality of rights was panting with a new-born consciousness; it was not in rural but in urban life, in the smoke of cities, in the din of ports, that the reforms were maturing that should strike the century bells with the last note of the middle ages and awake mankind by the click and whirl and thunder of the arts to the amazing scenery which is now unfolding before us without exciting our surprise. There it was that new ideas of profit and of property, new conceptions of creative power and artistic combination, disturbed the stagnation of all previous time; and it was there, in the consciousness of common strength, and invigorated by a more rapid circulation of thought, that the stubborn spirit of freedom first made its roots broadly and profoundly. The king became disquieted at the rapid increase of London; but artisanship, trade and shipping found their way into Parliament. The democratical interest, distinguishing the orders of industry from the territorial aristocracy, was steadily diffusing itself and accumulating its power, running in even flood with ideas of equality and independence. Aided by the practical arts, it gained the first modern triumph; for while in an earlier day Wat Tyler could only summon a powerless rabble around his standard, who fell easily before the knights in their armor of steel, Cromwell afterwards gathered his heroic numbers from the houses of mechanics and merchants, Puritans in their religion and workmen in their lives, and a new era was opened at Marston Moor.

The first conflict and the first victory of the arts you celebrate this evening was waged and won in the land of our ancestors, whose history is strown with choice memorials of the sources of our own freedom. The progress of Great Britain, since she emerged from the middle period, has been the gradual yet constant growth of a nation of mechanics. The constitution of England, her unwritten law, deeply imbedded in the customs of her people, goes back for its derivation through all the stages of her advancement in these utilities. The stern features of feudalism, which first gave to it an ascendancy over the crown, have received in successive periods the softening influences of the arts which have made her system of industry a nursery of liberal ideas. Their imperial life, their enfranchised individuality, from which we at first derived our own, have grown up from her wharves, and warehouses, and workshops, until now they have become the first estate of the realm. That no tax should be extorted without the consenting voice of the legislature, has come from the early traders and mechanics whose defiance spoke in the cause of John Hampden; every representative reform has been the achievement of the towns rising over the ruins of baronial bowers; that no man shall be imprisoned by the royal will, is one of the flowers not of regal dispensation, but of the new classification of labor; religious freedom to the dissenter has gushed out from the wealth and influence of dissenters who run machinery and watch the hustings; the independence of the judges is a fruit of the middle interest of the nation which can disrobe the ermine when it becomes impure; the limitation of Parliaments is the decree which is heard from the Manchesters, the Sheffields, and the Liverpools; the liberty of the press is the inspiring utterance that rises from a thousand fields, on her land and sea, in which a roar of waterfalls mingles with a myriad of steam-engines in tones which all the kings of the earth cannot silence. In the whole round of her drum-beat her conquests have been the conquests of these arts. If it be true, as it has been said, that Arkwright, who placed cotton spinning in the weird sisterhood of national powers, bore the English nation triumphantly through the wars of the French revolution, it is equally true that neither Pitt nor Wellington, but Watt, who organized the steam-engine, was the conqueror of Napoleon. And within our own memory the final disenthralment from an overshadowing aristocracy was secured in a single day by the brilliant triumph of the "untaught inarticulate genius" of George Stephenson, when he gave the first start under high pressure to the express train that made over the Liverpool and Manchester road the grand trial trip of the age of progress,—the inventor and engineer being the plain Northumberland mechanic,—the witnesses, Brougham and Wellington and Huskisson, ladies, court and people,—and the freight, all the interests and all the hopes of civilization. Truthfully and philosophically did Dr. Arnold of Rugby exclaim, as he stood upon one of the bridges and watched the train flashing through the fields belonging to lords who had done their utmost to thwart the experiment: "I rejoice to see it, and to think that FEUDALITY IS GONE FOREVER."

It would be pursuing a topic already too familiar to discuss at any length the relations of the mechanic arts with the development of public liberty in this country. They were, more distinctly than other interests, the causes and agencies of its independence. About the middle of the last century manufactures acquired an importance in Europe which distanced all former example, and spread rapidly to this side of the water where they found a population in the Northern colonies who for many years had been trying their hands at the same kind of work. Under the new impulse which now began everywhere to stimulate these pursuits the people of Massachusetts and of other colonies eagerly caught at all suggestions which came from Europe and quickly added to them their own originalities of invention. Then came the repressive and at times prohibitory policy of Great Britain, having all the power of Parliament to support it, aiming to destroy these hives of skilled labor while they were yet forming and before they should be able to compete with those of the Mother country. The purpose was the impoverishment of the colonies in the departments of handicraft, and as Mr. Burke said in his great speech on Conciliation, the English nation seemed to act upon the thought that America was becoming her rival in this class of production. Such legislation aroused a responsive spirit of resolution on our side, and the men who were pursuing these labors and were imparting to the life of New England a vigor and elasticity she had never before possessed, became restive under the restraint, resentful to tyranny, and ready for independence. So that when the time came for rupturing the tie of empire, the question of taxation was rather the occasion than the primary cause of the war. The Revolution was a necessity out of years of accumulating measures of despotic rigor and repression, all directed to shattering the arm of art and skill in these northern communities. The last blow which evoked the spark that burst into a blaze of conflict fell ostensibly indeed upon commerce; but the thousands who had been struggling at the infant manufactures of the time, whose manly hopes and sinewy arms had been kept down by legislative oppression dictated from a throne three thousand miles away, now outnumbered the merchants and helped them to spread the flame. These were the men, the mechanics and artisans of Boston and the seaboard, who made up the constituency that stood behind Samuel Adams as he walked these streets watching and directing the rising storm. There was something in their experience under the British colonial system that urged them on to the contest; there was something more in their occupation, as creators in the system of political economy and in the domain of art, which elevated them to lofty conceptions of manhood and made them fit for earnest service in the struggle for liberty.

Singularly and especially after the Revolution, were your interests instrumental in organizing peace under a constitutional union of the States. The name of the early President of this Association, PAUL REVERE, worthily retained in our day in the relations of hospitality, of trade, and of manufactures, remembered in connection with all that he accomplished for the establishment of our national government, at the first mention of it snatches from my lips everything I could say, if I ought to say even a word, upon a branch of my theme so interesting as this is. It has always appeared to me the wonder of our history, how, out of the chaos of the individualities of States, out of commercial diversities and political antagonisms, out of the idiosyncracies of climate and domestic institutions, out of conflicting reminiscences of origin, settlement and race, any Union at all ever came to us; but the wisdom of the God of our fathers was higher than ours. There rises before me the beauty, the mystery, the harmony of the States and the classes which from so great diversity united in framing and confirming the Constitution. Our own New England was divided so that if Massachusetts had an interest and a patriotism which overcame some of her theories and gave her among the earliest to the Union, Rhode Island had a revenue policy and perhaps some other reasons which kept her out until a little after the eleventh hour. In the convention of New York and Massachusetts, I suppose that question, so vastly interesting to the generations of America, to have been decisively settled for the whole confederation; and in both of these States it is not too much to say now in the light of tradition and history, that if it had been left exclusively to the landed interest, the government under whose flag your exhibition illustrates alike the victories of arms and of arts could scarcely have been established. Here in Massachusetts the communities in which manufactures allied to commerce had made most progress, turned the trembling scales in favor of its adoption; and I believe it is a fact now well understood, that when eminent men, who led the councils of those days in this State, hesitated about the ratification, the manufacturers and mechanics, animated by the fire and patriotism of Revere, pressed them up to duty, and enforced the decision of the convention. Quite similar were the circumstances which attended the result in New York, in whose convention the Constitution received the vote of only the slightest majority of delegates.

To the genius and efforts of Alexander Hamilton, which never shone more conspicuously than in the convention at Poughkeepsie, that conclusion will forever be attributed. He was a delegate from the commercial metropolis, but his election may be traced to the meeting of the mechanics of that city, who assembled at the house of William Ketchum, and determined that he should be elected. History, that selects her heroes, whether in peace or war, from the number of those whose speech rules the forum, or whose command propels squadrons on the field, and cannot pause to inquire who chose the orator, or who fought under the order and the bugle, awards to Ames and his associates in Massachusetts, to Hamilton and his associates in New York, the honors of the adoption of the Constitution and of the ages of glory under it. Inquiry and analysis disclose to us the antecedent detail,—how the manufacturers and artisans of Boston and New York furnished to Ames the inspiration of his eloquence, and to Hamilton the opportunity for the amazing display of his intellect and his demonstration which carried the day for all coming time. The fame of your Association culminates this evening in the bare mention of their renown.

The limitations of this evening's exercise will not permit me to consider with any detail the influence of the mechanic arts upon social progress; that would be a task for history and for volumes. It will surely be sufficient for the lighter purposes of the present occasion to treat the topic rather by illustration than by narrative or argument, especially since our own experience and observation supply all needed argument.

An eminent English writer, Mr. Carlyle, who has not been at all satisfied with us in war, has criticized our condition as severely under peace,—claiming that we have lost our belief in the invisible, and that we live and hope and work only in the visible, the practical, and the mechanical. The theory is that our best days are over, that our spirit has become tame and enfeebled, and that under the prevalence of the material, the commercial and the mechanical, our social tone and temper has lost its higher energy and sentiment. No argument can satisfy this theory, but historical illustrations scatter it to the imperceptible winds. This transcendental ideal of life, in its contrast with the later and experimental ages, is illustrated in the type of the earlier centuries which gave the trial to that doctrine and opened the way for the trial of ours. I invite you to the comparison.

During the long period which closed when modern history began there was no lack of philosophy, but a vast want of mechanical utility. Great masters filled the world with syllogisms, but with no new tools for workmen. They were rich in brilliant conceits, fine abstractions, and keen dialetics, but few new inventions, or practical improvements in morals or social existence, had a place in their barren fields. The conveniences and comforts of life were esteemed too vulgar for that philosophy. Alike in the night of the pagan schools, and in the dim twilight of a corrupted Christianity, men disputed in never-ending cycles of abstract conceptions, of ideal good, of the essence of things—and where one left off another began and ended. The useful was undignified; and while true wisdom might well be found in reasoning after the organization of the soul, it could not come down to the idea of windows through which men might see, and of pipes that should warm their freezing bodies. Angles of thought were polished to more than Damascan lustre, but angles of iron, in its thousand styles for use, would have been a scandal to the Grove and the Portico. Even the imperial intellect of Aristotle might have been pleased by the suggestion of a swinging pendulum as illustrative of the action of the human mind, but the intimation of its application to a Yankee time-piece would have ruffled his proud spirit. The idea of the electric fluid would have been accounted sublime as an abstraction, but the sight of Franklin flying a kite to evoke an eternal law from the skies to protect our houses and barns, would have wrung a pang from many a Grecian philosopher. Those were great times and great men, but there were few benefactors in the larger sense pertaining to the whole of time. There was little of progress, for all that was taught died with the disputant, and there was nothing left to be transmitted to the next age for adoption or improvement. Even down to the hearing of modern ears this subtle philosophy held its control; alchemy, astrology, and the vain pursuit after the philosopher's stone were in highest favor, while the arts and inventions that supply and elevate the race were in scholastic outlawry. During all this philosophic millenium, governments were treated as ingenious agencies for conducting men to the ideal of virtue, and not as the splendid structures of experimental wisdom for enriching the people in all that art, and wealth and morals can provide for the multiplying wants of social man. Unpractical schoolmen rose in proud succession, and through their gigantic intellectual machinery, furnished dogmas enough to the State and the Church for generations even now unborn; but, viewed from the observatory of a modern, living age, they appear in some respects not unlike those massive windmills which formerly amused summer hours at Newport, whose ponderous arms revolved with fearful momentum even after the last kernel of fruit had departed from the hopper.

But at length, in the fulness of time, our new producing powers acquired possession of the field. Their rapid development has been commonly ascribed to the change which Lord Bacon introduced to the studies and pursuits of men, under which physics, arts, utility, progress, have for centuries ruled over the circuit of human thought. Certain it is, that within a century after his accession to the mastery, the toiling and patient philosophy of induction and experiment, of investigating, step by step, and process by process, for the laws which guide mankind in their efforts to subdue matter and combine forces, was held in highest favor. Agriculture started from its slumberous bed as if touched by the wand of a charmer. Disputations of the schoolmen receded, and governments and morals and arts began to be judged by their effects. Alchemy and astrology fled with their lost dignity, and the arranging and adjusting of natural forces took their places. Kings had their laboratories, judges studied watercourses, and fine ladies turned some of their patronizing glances from the halls of courtiers to the hitherto vulgar labors which make tradesmen, artisans and farmers. Architecture began to be contemplated in its bearings upon the common ranks of life; houses to be ventilated; lands to be drained; machinery to be invented and set to work; trade to become respectable; and the pursuits of man to receive that direction which has continued in an ascending scale until now our civilization is largely a record of these practical studies and these multiplied powers.

Suppose now that Lord Bacon could come back in the flesh, accompanied, if you please, by some of those masters in natural science and mechanical construction who have become familiar to us as public benefactors, and could tarry long enough to survey this vast convolution of results which sweeps the globe in its circle of blessing,—what a scene would meet their astonished gaze!

They would behold hundreds of millions of people engaged in occupations which in the old time had not been thought of,—such a panoramic view of enterprise, and production, and consumption, as would have startled their own vivid imagination in lifetime. They would witness coal fields and iron mines reclaimed from long neglect and become the very bases of modern civilization without which nations cannot be opulent or independent,—the earth kindly opening its depths to receive myriads of men who, by the light of science and the aid of arts, bid defiance to its darkness and its gases, pump away its water and its refuse, and extract the ores and metals which are wrought to fit a thousand utilities and to become objects of inspiring beauty; agriculture restored to the honor of the time of the patriarchs, goaded by energies unknown before, enlivened by modern machinery and modern markets, and in return conferring upon them its victorious sheaves. They would behold

> "steam, that fleshless arm,
> Whose pulses leap with floods of living fire,"

changing the features of the world, commingling the flags of countries in the dance of the sea, darting great ships in defiance of the winds and the breakers, and railroad cars where before no horse had penetrated, operating more machines than the hour would permit me to enumerate if I knew them, sending out from this city every morning before the cock crows thrice an hundred thousand printed sheets which Cabinets read before they decide, and all New England before it approves,—facilitating intercourse, acquaintance, refinement, joy; in Great Britain alone twenty thousand engines driven day and night with a power equal to two millions of men; the artificial and mechanical forces of our land exceeding all the hands of the four continents of the globe a century ago, and two-fifths of our male population over fifteen years of age employed in manufactures, the mechanic arts, commerce and mining; bays and rivers and gulfs spanned with a strength that shall never fail and with a beauty that shall survive the decay of the Parthenon; the wilds of the country reclaimed, cities starting up as by enchantment, crowded with order and intelligence by day and lighted up by a flame that never goes out by night; in our own empire thirty thousand miles of railroads, making peace always ready for war and converting war into peace, with a quickness and a quittal which other times never knew; in this same America twenty-five thousand miles of wires, I dare say there are more, mute yet eloquent, talking up to the high noon of night, of wants and supplies, of trades and battles, ever flashing with the messages of the living and dead; a commerce taking the products of the land and of the machines to the side of the sea, and there committing them to another country, another world; a system of credit and exchange founded on religious truth, sustained by honor and faith, blessing him who gives and him who receives; a civilization they would behold, and admire, and pray for, which places it in the power of man to "wield these elements and arm him with the force of all their legions."

This photograph Lord Bacon and his companions would accept as a picture of a portion, and only a portion, of the fruits of the tree of modern utility, which he assisted in planting, whose roots are intrenched in every well-ordered State to-day, whose pendant boughs canopy our time. These they would recognize as the trophies which are sometimes characterized as the material successes of commerce and the mechanic arts. Nor material successes only. For the survey would be incomplete which should not perceive the average duration of human life lengthened out, alleviations of suffering discovered, some diseases eradicated; these steam presses opening a flood of literature and scattering the Holy Scriptures like leaves for the healing of the nations; the English language pervading the earth with exquisite thought and immortal charity; schools made free, universities accessible, and churches thrown open, where but recently solitude reigned supreme; institutions of benevolence sending up to Heaven their thanksgiving and spreading their benefactions through society for the ills of the body and the mind; history at her work clearing up the mysteries of time; poetry sending its deep-toned vibrations through the heart of the age; the fine arts awakening the soul in its daily toil to the eternities of love and beauty; and the body of law and order breathing with a free spirit and laying a kind, restraining hand upon the waywardness of our nature. Who is the man, so unbelieving in the very presence of this world-wide exhibition which is passing before him, as to say that this mechanical period has not outstripped every former period in the generality of its progress and in the loftiness of its ethics?

So also, gentlemen, the area of the hall of liberty and the market house which you have thrown open to the public for three weeks of holidays and for universal instruction, is crowded with proofs that your department of industry is alive with the higher taste and sentiment which becomes a part of æsthetic culture. There I behold inert substances transformed from their own mute creation into the properties and activities of mechanical life,—that which was dead in nature made by skill and art to speak in a language felt and understood by the great circle of humanity,—the wood, the metal and the ore, so changed as to become a charm to the eye, music to the ear, and an awakening medium to all the sensations which are undying in the heart of man. I see the rude sands scooped from the natural beds of Berkshire, fused with alkalies, and unified into forms which, if they were less common, would be valued as the rarer diamonds; I witness that model steam-engine under action, which was brought hither from our county of Worcester, out of a shop where I have seen three hundred loyal and lordly men pounding their intelligence into the work of their hands; my eye ranges over the textures made up out of the fleece from the Western prairies or the white ball from the Southern savannas, so fine that a pound of cotton has been lengthened and attenuated into a thread of a thousand miles. These are the works,—but whence has come the conception? These are the arts,—but who are the artists? Is it according to the analogies of our knowledge, that they who perform these things can be coarse and rude in their natures, unresponsive to taste, and sentiment, and humanity? The modern artificer is the creator of beauty, and lives amid its forms and its suggestions. The soul of mechanism is animate with poetry. The ideals first exist in the mind of the mechanic, and are next transferred to wood and metal, and then are applied under the laws of time, and space, and fluids, and at length are invested with a perpetual life of motion that finds its type in the revolving spheres of the heavenly world:—and tell me, can these things be so and not awaken all the capacities of his nature to the pleasures of culture, and refinement, and sensation? The social life of our time is pervaded by the æsthetics of the mechanic arts. The eye, the sense, the soul of the State finds a school larger and freer than municipalities ever founded, so long as men, women and children throng their way to the splendid machine, gaze upon its unwonted style, its Gothic strength, its columnar supports, witness the balances of its action, the awful and mysterious silence with which it works, the ideal of proportion that makes it "the glass of fashion and the mould of form," and retire with plaudits for its architect and with blessings on his head. And if you follow out the thought, and apply it to the endless diversities of mechanism, and consider how extended the subdivision of this labor and art becomes, and how it individualizes the man and starts his nascent tastes—and how it unfolds on another plane and in another grade, and produces a Powers, a Story, a Clevenger, a Ball, a Hosmer—I cannot believe that you will hesitate to reckon this field of study as a part of the higher culture that places upon this age a brighter coronet than any that was ever won by mediæval kings. These arts impart to our country and to our generation the qualities of an epic age. The English traveller spoke the truth who returned home after his tour in America, and published his declaration that, far from being destitute of the poetic element, our country is itself one grand national poem. The spirit of that poem is beyond every oriental example. It is not content to float lazily in sharp-nosed gondolas to the music of "flutes and soft recorders," but it asserts a loftier mission, breathes through all the arts at home, and utters itself from our "Flying Clouds" and "Howling Winds," and all other clipper ships, of whatever name, over the zones of the earth.

And thus, approaching the manly arts which your Association represents, and in my brief hour only by allusion touching, not tracing, their mysterious origin and their unrecorded growth, their effect in developing the resources of the earth, their relations to the liberty and the progress of man, and their connection with the popular genius and the popular education, I know not how better to express in a few words their beginning, life and results, than by quoting the lines of a charming poetess:—

> "There walks a spirit o'er the peopled earth,
> Secret his progress is, unknown his birth;
> Where'er he turns the human brute awakes,
> And roused to better life his sordid hut forsakes;
> He thinks, he reasons, glows with purer fires,
> Feels finer wants, and burns with new desires.
> Obedient nature follows where he leads,—
> The steaming marsh is changed to fruitful meads;
> Then from its bed is drawn the ponderous ore,
> Then commerce pours her gifts on every shore;
> Then kindles fancy, then expands the heart,
> Then blow the flowers of genius and of art."

Gentlemen, I conclude as I began, by felicitating you over the present condition of your Association, and by adding my appreciation to that which you must have of your position in the great confederacy of arms and of arts. Your exhibition represents the power of New England in war and in peace. The mechanics of Massachusetts bore a leading part in the opening scenes of the recent struggle. This is well illustrated in what General Butler has told me,—that when, in the dark days of the memorable April which shut off Washington and THE GOOD PRESIDENT from communication with the country, he was on his way with one of our regiments to the relief of the capital, and at Annapolis found the only remaining locomotive dismembered by rebel hands, he inquired of his men whether any of them could restore it,—upon which a half dozen stepped forth from the ranks, saying that they had helped build that engine in one of the shops of Massachusetts, and they could put it together again; scarcely sooner said than done, and the Massachusetts machine speedily took a thousand Massachusetts bayonets and Massachusetts hearts into Pennsylvania Avenue, and saved the government from the abyss which was already yawning to receive it. This patriotic and effective example was sustained by the producing classes of the State throughout the war, alike here at home in the preparation of supplies, and by the gallantry of her serried files in the field. And now, when martial scenes have disappeared, the same high duty rests upon the people of the Commonwealth, and the same lofty triumph will reward them. This prosperity and happiness among ourselves, this influence, this credit, this renown in all our relations with the country and the world, plead trumpet-tongued that these arts, without which there can be no sceptre for us, may be developed and extended until they shall diffuse their benignity over all States and over all ages. Happy are you in the privilege of enjoying so conspicuous a share in advancing the civilization and the power of your native land.

THE LEVEE.

In accordance with former custom, after the delivery of Mr. Bullock's Address, the Government of the Massachusetts Charitable Mechanic Association held a Levee, complimentary to the contributors to the Exhibition and the judges appointed to examine and report on the various articles contributed.

The following gentlemen were appointed to act as marshals during the evening: —

Albert J. Wright.
Henry A. Lyford.
Henry W. Wilson.
Horace C. Rose.
Theophilus Burr.
George H. Chickering.
Alfred A. Mudge.
S. S. Woodcock.
Nathan Sawyer.
Robert Hawthorne.
John A. Robertson.
Charles E. Perkins.
O. J. Rand.
Edward Jones.
William H. Dutton.
Levi Chubbuck.
George K. Hooper.
E. B. Badger.
O. J. Faxon.
Henry Chaffin.

About five hundred members of the Association and invited guests assembled in the new and spacious Hall of the Horticultural Society, at the conclusion of the exercises at Tremont Temple. After a brief interchange of congratulations on the success of the Tenth Exhibition, a procession was formed in the reception room under the direction of the marshals, and marched to the upper hall, where a bountiful entertainment had been provided by that prince of caterers, Mr. J. B. Smith. Hall's band was stationed in the orchestra, and furnished a variety of excellent music during the evening. The President asked the attention of the company, and introduced the chaplain, Rev. J. M. Manning, who implored the Divine blessing on the feast and the occasion.

After a delightful half hour of sociability and gastronomic exercise, the company were called to order, when the President of the Association, Joseph T. Bailey, Esq., delivered the following congratulatory Address:

ADDRESS BY PRESIDENT BAILEY.

GENTLEMEN:

We are met this evening, under the most auspicious circumstances. Since the last Exhibition of the Association, the great American rebellion, which aimed to overthrow the liberties and the Constitution of the country, and which required a sacrifice of blood and treasure to suppress, is now a matter of history. In accordance with custom and precedent, our Exhibition should have been held in 1863. Forced by the war to defer until 1865, and meeting as we are to-night, with none to molest or make afraid, allow me to congratulate you upon the success which has attended our endeavors in inaugurating the Tenth Exhibition of this Association, and in presenting to the public, results of the skill and inventive genius of the artisans and mechanics of the country. Our halls are filled with the most beautiful fabrics, interwoven and prepared with patient toil by delicate fingers, and with an almost endless variety of labor-saving machines, propelled, in part, by steam, the whole forming one of the grandest collections ever exhibited in this city, upon which thousands have already gazed with admiring wonder.

While the display of machinery designed to save labor is large, the display of goods which they were made to manufacture is small. This is especially true of cottons and woollens, showing that the mechanic is more ready to put in competition his inventive genius and skill than the merchant is the products of that skill. And we are constrained to feel that, unless something more is done to encourage our artisans, they will be inclined to leave our rock-bound coast and sterile hills, for more genial climes, now opening before them on the sunny plains of the South.

The Mechanic Association, by holding these exhibitions, is endeavoring to encourage a commendable competition in the manufacture, both of the useful and the ornamental, and thus show to the community the progress which is made from year to year. The pecuniary profit alone is not the primary object of the Association in holding these exhibitions. If this were the case, they would assess themselves, and thus dispense with their arduous labors. The receipts from visitors are large, yet the expenses are correspondingly large, and will amount to more than twenty thousand dollars, ere the exhibition comes to a close.

Our thanks are due to our contributors for the prompt and liberal manner in which they have responded to our call; for upon them we have relied to make the display sufficiently attractive to draw in the public, and thus meet these heavy expenses. We, in our turn, have endeavored to aid them in every possible way, so that their inventions might be properly placed before the community, and their beauty and utility appreciated. The practical value of our exhibitions to inventors cannot be overrated. Shut up, to a great extent, within themselves in the endeavor to create that which their minds have conceived, they are glad, when their creations are completed, to place them side by side with others, that the public may judge of their merits. It is a matter of great rejoicing that this community appreciate the skill and talents of inventors; if it were otherwise, the productions of useful, labor-saving, and ornamental articles would have had comparatively little sale, and genius and talent would, to a great extent, be dormant and inactive.

To the judges, we express the same gratitude for their ready response to our call for disinterested men to examine and pass judgment upon the merits of our contributions. Most of them are gentlemen in active business life, and they have generously devoted whatever of time has been necessary to this service, to the neglect, it may be, of their own personal affairs. The managers fully appreciate their valuable aid, and trust they will have their reward in the encouragement of honorable inventive toil.

Our thanks are also due the public for the liberal patronage they have bestowed upon our exhibition. The artisans and mechanics of every name, who have displayed the results of their labor here, have been greatly encouraged by the thronging thousands who have gazed with delight upon the numerous articles with which our halls have been filled.

To the daily and weekly press, to which we have been so largely indebted for generous notices, both before and since the Exhibition was thrown open to the public, we present our hearty thanks. Their favors have been most gratefully received, and are hereby publicly recognized.

We would not forget, also, to acknowledge with profound gratitude, the eloquent address from the distinguished orator of the evening. During the unhappy civil war which has but just terminated, his eloquent utterances have thrilled the loyal heart, not only of this Commonwealth, but of the whole North; and we would to-night tender to him our hearty thanks.

Let us hope that when the next Triennial Exhibition shall occur, it may find our whole country, "however bounded," united, prosperous, and happy, with a future, grander, and more glorious than the most enthusiastic dreamer has ever imagined.

At the close of the President's remarks, he proposed "The health of the orator of the evening," which was received with applause, and three hearty cheers were given for the Hon. Alexander H. Bullock.

The President called on the chief marshal to officiate as toast-master, and appropriate sentiments were eloquently responded to by Doctor George B. Loring of Salem; Major Ware, of the State department; Hon. George W. Messinger, Chairman of the Board of Aldermen of Boston; Hon. Mr. Barstow of Providence, President of the Rhode Island Mechanic Association; Mr. Elwell of Portland, on behalf of a delegation from Maine; Professor Rogers, President of the Massachusetts Institute of Technology, and others.

The guests retired at a seasonable hour, well pleased with their entertainment.

LEVENTH EXHIBITION

OF THE

MASSACHUSETTS

TABLE MECHANIC ASSOCIATION,

AT FANEUIL AND QUINCY HALLS, BOSTON,

SEPTEMBER AND OCTOBER,

1869.

BE JUST AND FEAR NOT.

BOSTON:
WRIGHT & POTTER, PRINTERS, NO. 79 MILK STREET,
(CORNER OF FEDERAL STREET.)
1869.

☆ MASS. HIST. SOC.

ELEVENTH EXHIBITION

OF THE

MASSACHUSETTS

Charitable Mechanic Association,

AT

FANEUIL AND QUINCY HALLS,

IN THE CITY OF BOSTON,

SEPTEMBER AND OCTOBER, 1869.

BOSTON:
WRIGHT & POTTER, PRINTERS, No. 79 MILK STREET,
(CORNER OF FEDERAL STREET.)
1869.

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GOVERNMENT OF THE ASSOCIATION

For 1869.

President:
JONAS FITCH.

Vice-President:
ALBERT J. WRIGHT.

Treasurer:
OSMYN BREWSTER.

Secretary:
JOSEPH L. BATES.

Trustees:

CHARLES F. AUSTIN,
THEOPHILUS BURR,
IVORY BEAN,
GEORGE W. SMITH,
ANDREW J. MORSE,
HENRY A. LYFORD,
J. PUTNAM BRADLEE,
GEORGE ROSS,
L. A. HUNTINGTON,
SAMUEL D. HICKS,
DAVID CHAMBERLIN,
WILLIAM LEAVITT.

BOARD OF MANAGERS OF THE EXHIBITION.

The Government of the Association, organized as follows, constituted the BOARD OF MANAGERS OF THE EXHIBITION:

EXECUTIVE COMMITTEE.

To prepare all circulars and advertisements; to appoint the Judges and give them their instructions, receive and examine their reports, and award the premiums to the contributors.

JONAS FITCH, *Chairman*,
ALBERT J. WRIGHT,
OSMYN BREWSTER,
JOSEPH L. BATES. *Secretary*,
CHARLES F. AUSTIN,
LYNDE A. HUNTINGTON.

COMMITTEE OF ARRANGEMENTS.

To have the entire charge of the Halls of Exhibition, the reception, preservation and display of all the articles contributed, and attend to the delivery of them at the close of the Exhibition. They are to prepare such Rules and Regulations as they may deem expedient.

The Vice-President, as Chairman of this Committee, is to exercise a general superintendence of this department; nominate all committees of sections, clerks, police, and other assistants which may be necessary, subject to confirmation by the Committee.

ALBERT J. WRIGHT, *Chairman*,
THEOPHILUS BURR,
IVORY BEAN,
GEORGE W. SMITH,
ANDREW J. MORSE,
WILLIAM LEAVITT,
HENRY A. LYFORD, *Secretary*,
J. PUTNAM BRADLEE,
GEORGE ROSS,
SAMUEL D. HICKS,
DAVID CHAMBERLIN.

EXHIBITION CIRCULAR.

The Massachusetts Charitable Mechanic Association, believing their previous Exhibitions to have been the cause of the diffusion of much useful knowledge, and the means of inspiring renewed efforts for the advancement of mechanical skill, by bringing to public notice and friendly competition the productions of those who aim for progress, improvement, and perfection in their chosen occupations, respectfully announce their ELEVENTH EXHIBITION of American Manufactures and Mechanic Arts, at Faneuil and Quincy Halls, in Boston.

The present year, free from the tumults and perplexities which tend to disturb the regular industry and the usual course of business operations, promises well for the abundant success of a Mechanics' Exhibition.

The best results of the thought, labor, skill and taste, in the production and multiplication of whatever will add to the convenience and comfort of mankind, wherever made, throughout our common country, will be welcome to the halls; and the Board of Managers pledge their best exertions to make the Exhibition, as far as is possible, attractive to the public, impartial in its awards, and satisfactory to the contributors.

Steam motive power will be provided, that Machinery of all kinds may be seen in actual operation; and the Managers respectfully suggest to Inventors and Proprietors, that this arrangement will afford an invaluable opportunity for displaying the advantages and capabilities of their various machines, in competition with others, under one view; so that there can be no question as to their relative merits.

Medals of Gold, Silver and Bronze, with an engraved Diploma, will be awarded to such articles as may be found to merit distinction.

Arrangements have been made with the several railroads which terminate in this city, by which merchandise intended for this Exhibition may be brought to the city at greatly reduced cost for freight.

Faneuil and Quincy Halls will be connected, as heretofore, by a bridge: and the Managers will be ready for the reception of contributions intended for Exhibition and Premium, on Monday, September 6th.

Annexed to this circular are the Rules and Regulations adopted by the Board of Managers.

The attention of exhibitors is particularly called to the necessity of all contributions being sent to the halls at an early day before the opening, in order that they may be suitably arranged, and ready for the inspection of visitors.

All persons intending to contribute to the Exhibition articles requiring large space, and those wishing for more particular information, can address JOSEPH L. BATES, Secretary of the Association, Boston.

RULES AND REGULATIONS FOR THE ELEVENTH EXHIBITION.

I.

Articles intended for exhibition and premium will be received at Quincy and Faneuil Halls from Monday, September 6, to Saturday, September 11. Checks for the same will be given, which must be presented when the articles are returned.

II.

The Exhibition will be opened for the reception of visitors on Wednesday, September 15, at noon, and will continue to the evening of October 6.

III.

Articles intended for sale will be labelled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Committee.

IV.

Proof of origin must be furnished, if required, for every article offered for premium.

V.

A Board of Judges will be appointed to examine and report upon all articles presented, unless the owners shall, at the time of their entry, give notice that they are for exhibition only, and the Executive Committee will award premiums on such articles as shall be declared most worthy. The premiums to be delivered as soon as they can be prepared.

VI.

The morning of each day, until nine o'clock, will be appropriated to the Judges; and no other persons will be admitted during the time thus appropriated.

VII.

It is particularly requested that every person who offers a new machine, or an improvement on an old one, will leave at the Clerk's office a description of its peculiarities, that the attention of the Judges may be called thereto. Contributors or Judges desiring to communicate with each other will leave their communications with the Clerk, at the central office.

VIII.

Whenever the articles will permit, the Contributors are requested to exhibit their goods in glass cases. High upright cases are far better than common counter cases. All articles deposited will be at the risk of the owners. The most effectual means will be taken, through the agency of the police and otherwise, to guard and protect the property in the Exhibition; but the Managers cannot be responsible for losses that may be occasioned by theft, accident, or damage of any kind.

IX.

Gunpowder, Fireworks, and dangerous implements, will not be allowed in the halls; and the Managers reserve the right to reject any article that they may deem objectionable.

X.

Contributors to the Exhibition will not be permitted to furnish samples or make gifts to any one within the halls, whether employed or not, unless by permission first obtained; and it will be the endeavor of the Managers that all articles shall be returned to the owners without diminution or loss.

XI.

Owners or agents offering articles for premium or exhibition, will receive tickets of admission; but in no case transferable. If transferred, the right of admission will be forfeited.

INSTRUCTIONS TO THE BOARD OF JUDGES.

The Judges are invited to examine with great care every article submitted to their inspection, and to make such reports as its merits may, in their opinion, warrant.

The Board of Managers would advise an early examination, while the goods are in their best condition.

There will be four grades of awards, viz.:—

No. 1. A GOLD MEDAL, which will be granted only for very valuable and meritorious inventions or improvements.

No. 2. A SILVER MEDAL, for articles of superior workmanship, new applications of material, and improvements in construction.

No. 3. A BRONZE MEDAL, for articles of superior workmanship, but of less importance or utility.

No. 4. A DIPLOMA, for all other articles deserving a favorable mention testimonial.

Each Committee of Judges will appoint its own Chairman, and notify the Secretary of the same; and report through their Chairman to the Executive Committee *on or before Saturday*, the 2d of October.

Each Committee will receive a book containing a list of the articles they are to examine, and also a book in which to write their reports.

Should the Judges require the attendance of a contributor for the purpose of explaining an article submitted, they will please give notice at the office in Quincy Hall.

The Halls will be open for the Judges each morning, from half past 7 to 9 o'clock.

Should any vacancy occur in the Board of Judges, it is desired that notice may be given to the Executive Committee without delay.

It has always been the wish of the Board of Managers and of the Contributors, that the Awards of Premiums may be announced before the close of the Exhibition; the Managers have not heretofore been able to do this, in consequence of the delay of the Judges in sending in their Reports. It is therefore earnestly desired that the present Board of Judges will send in their Reports on the day above specified, to enable the Managers to effect this desirable object. The office of the Executive Committee will remain open till *nine o'clock*, on the evening of October 2, for their reception.

N. B. *Whenever a Medal is given, it will be accompanied by a Diploma.*

REPORT OF THE MANAGERS.

FOUR years having elapsed since the Tenth Exhibition of American Manufactures was held, under the auspices of the Massachusetts Charitable Mechanic Association, and a general desire having been expressed that an Exhibition should be held during the present year, a special meeting of the Association was called, in January last, to consider the subject. A full discussion was had, when it was unanimously voted that it was expedient so to do. The Board of Government was named as a Committee of Arrangements, with full power, and a large and ample appropriation was made to defray the expenses incident thereto.

The usual means of calling the attention of Mechanics and Manufacturers were applied, by liberal advertisement, by circular, and by personal appeal.

The question of a change in the place of holding the Exhibition, was a matter which caused a great deal of anxious thought, occasioned by the erection of the "Coliseum," designed for the successful "Peace Jubilee" held in our city in June last. Many of the friends of our Association, both members and others, interested not only in the success of our Exhibition, but also zealous in anything that would promote the welfare of our city, were desirous that the Exhibition should be held in the Coliseum.

The whole matter came before the Government, who gave it a careful investigation, and after a lengthy consideration, it was decided that it was inexpedient to change the location already assigned. The Government have had no reason to doubt the wisdom of the decision.

This disposed of, all the preliminary and incidental matters were arranged, bringing into requisition whatever material had been found useful heretofore, with such additions as experience had suggested to be wanting.

Thus prepared, FANEUIL and QUINCY HALLS again received us, with their interior arrangements generally similar to the more recent Exhibitions, the principal change being that a gallery was provided in the Rotunda of Quincy Hall, which afforded an excellent position for the display of quite an array of sewing machines, etc.

At noon on WEDNESDAY, September 15th, the Eleventh Exhibition was inaugurated under very favorable auspices. The large daily attendance of visitors gave gratifying evidence that the public interest in our Exhibitions had by no means abated. We are enabled to report a very successful result, in its effective tendency towards fostering and promoting the Mechanic Arts, which is our ultimate aim.

The number of Entries was about 1,520, which does not, however, indicate the whole number of articles exhibited, as several articles are often included in the same entry.

Contrasted with previous Exhibitions, we think that, *as a whole*, the Eleventh, in merit and usefulness, was in many points far superior to any of its predecessors.

While, as usual, we may regret that there was a lack in some of the departments where we might have looked for a greater display, yet this was fully compensated for by the extra fullness in other branches.

The portion of space assigned to machinery was very large, and the contributions, many of which were in operation, embraced many articles of great practical value, the careful examination of which by the thousands of visitors, testified to their general utility and interest. That these contributions deserved the space and attention bestowed upon them, let the voluminous and highly interesting Report of Committee Number One, *with its nine sub-divisions*, testify. Some of the displays of goods were very large and comprehensive, embracing contributions of great value, and the good taste of the contributors was often displayed in the attractive appearance of the articles shown by them.

The selection of the Board of Judges was, as usual, a most difficult task, requiring, as it did, the selection and the acceptance of about one hundred and fifty persons, from all the various walks of life, whose fitness and impartiality could be relied upon. We believe that the perusal of their Reports, which follow, will prove that the choice was generally judicious, and that, as a rule, their awards are appropriate and just. It is proper to say, in this connection, that but very slight alteration has been made by the Executive Committee in the awards of the Judges, as they were found to be generally in accordance with the "Instructions" furnished them; which, while they may have somewhat hampered a portion, yet appear to be about as perfect, for the guidance of the whole body of Judges, as could well be devised.

We have to thank the Judges, ladies and gentlemen, for their patient investigation of the claims of the numerous competitors, and for the many interesting reports which they elicited.

The number of awards was as follows:—

Gold Medals,	34
Silver Medals,	165
Bronze Medals,	194
Diplomas,	335
Total,	728

The Exhibition closed on Saturday, October 9th, with no apparent diminution of interest.

In closing, the Government desire to congratulate the members of the Association upon the success attending the Eleventh Exhibition, trusting that, as a compensation for the months of labor and anxiety gratuitously bestowed upon it, there may result an increased zeal in behalf of the Mechanic Arts, and a just appreciation of their importance by the great public, who are so greatly benefited by the fostering hand of the Massachusetts Charitable Mechanic Association.

JONAS FITCH,
Chairman of Board of Managers.

BOSTON, December 16, 1869.

REPORTS OF THE JUDGES.

Reports of the Judges upon the various Articles exhibited at Faneuil and Quincy Halls, at the Eleventh Exhibition of the Massachusetts Charitable Mechanic Association, classified under their proper Heads, with the Names of the Judges, and the Awards of the Committee on Premiums.

No. 1.

MACHINERY AND NEW INVENTIONS.

JUDGES:

Daniel N. Pickering,
C. E. Rymes,
John Souther,
Henry W. Wilson,
Irah D. Spaulding,
George M. Bird,
James R. Robinson,
F. L. Bailey,
James H. Roberts,
Henry Endicott,
Oliver W. Bailey,
J. C. Hoadley,
B. F. Radford,
N. Henry Crafts,
John Thompson,
Louis Osborn,
Increase S. Hill,
Alonzo Warren,
Z. E. Coffin,
John Kennedy,
Hiram F. Mills,
Caleb C. Allen,
Charles Whittier,
Charles H. Hersey,
Nathan C. Lombard,
Arthur B. Underhill,
Lucius A. Cutler.

The General Committee on Steam Machinery and New Inven-ons would most respectfully submit the following reports of its espective sub-committees.

In performance of its several duties, your Committee has been very materially assisted by the kindness and courtesy of the officers and attachés of the Association, and would now express its many sincere thanks for all the courtesies it has received.

The department of the Exhibition examined by the Committee, embracing a great variety of design, form and material, contained many articles of very superior design and workmanship, and the new inventions included many destined to be very useful, while the contributions as a whole do the inventors, proprietors and manufacturers great credit in many particulars. In several cases, articles were so nearly like others of the same kind that it was an extremely delicate and difficult matter to discriminate as to their respective order of merit; but your Committee have endeavored to submit an impartial, just and equitable report in each case, and trust their report may prove to be satisfactory to the contributors as well as the Association.

SUB-COMMITTEE, No. 1.

STEAM AND AIR ENGINES AND STEAM MACHINERY.

DANIEL N. PICKERING, OLIVER W. BAILEY,
INCREASE S. HILL.

476. ATLANTIC WORKS, *East Boston.* Horizontal Stationary Engine, Babcock, Wilcox and Company's patent. This engine furnishes the power to run the machinery exhibited in Quincy Hall. It has been before the public some three or four years, and is gradually, but surely, winning its way to the unqualified approval of the best engineers in the country. The Committee know of no other engine whose record, by the indicator, approaches so near economic action,—which is from 92 to 95 per cent.,—and aside from any compliment given for the engine, which furnishes the power for the Exhibition, the Committee award for its superior value and merit, a *Gold Medal.*

542. J. C. HOADLEY & Co., *Lawrence.* Portable Steam-Engine, "Cinderella." In its construction and design, it displays a very judicious disposition of its several parts, to insure economy in the use of fuel, and durability, while all the working parts are easy of access. has important improvements and is of superior workmanship. more perfectly adapted for the purpose designed than any known to the Committee. We award a *Gold Medal.*

109. G. W. Davis & Co., *Nashua, N. H.* Steam-Engine. Fifteen Horse Power. This is a very smooth running engine, of superior workmanship and design, with an improved expansion apparatus for varying the action of the main steam valves. These are poppet valves, and are partially arrested in their descent by a curved inclined plane, which relieves them from a sudden shock in their descent. We award a *Gold Medal.*

884. H. McMurtrie & Co., *Boston.* One Model "Wright's" Steam-Engine. This is a small working model, with patent regulating cut-off. It is much approved by parties using it, and is one of several first-class engines, coming into general use. The Committee could not judge so well of its merits from this small model, as from one of greater size and power. It is considered of such promise as to deserve approval and a *Silver Medal.*

117. Adam H. Phillips, *South Dedham.* Horizontal Stationary Steam-Engine. One Horse Power. This engine was incomplete.

485. Henry Moore, *Charlestown.* Upright Stationary Steam-Engine. A miniature steam-engine, well made. *Diploma.*

96. W. I. Trafton, *Portsmouth, N. H.* A working, miniature Steam-Engine, "Fairy Queen." This is designed to furnish power for the small tools used by jewellers and others. It is silver-plated, and rests upon a polished hard-wood case containing a boiler. The steam is generated by gas. It has a silver-plated railing, supported by six posts, each having five gas jets. When lighted, it has a very brilliant appearance. Considering the excellent proportion and delicacy of the parts, and of the workmanship, and the novelty and utility of the idea, we award a *Bronze Medal.*

187. Louis Osborn, *East Boston.* Portable Hoisting Engine. It is well made, of good materials, has a steam jacket around cylinder, and is nicely balanced for high speed. Its arrangement of parts is compact and convenient of adjustment. A thoroughly good machine. *Silver Medal.*

357. Rawson and Hittinger, *Cambridgeport.* Portable Hoisting Engine. A well made, compact machine, of good materials and well designed. *Silver Medal.*

64. SHAW'S UNION AIR-ENGINE CO., *Boston.* Hot Air-Engine. This engine has been improved in some important particulars since the last Exhibition, the most important of which is the substitution of finely powdered black lead, as a lubricator for the pistons, instead of oil. We award a . *Silver Medal.*

893. T. S. CLOGSTON & CO., *Boston.* Three Patent Improved Cast Iron Sectional Steam-Boilers. This is a good kind of boiler for low steam. It is very compact, and we consider it better adapted for heating houses, public buildings and stores, than for use as a steam-boiler for high pressure. The Committee recognize it as similar to the American Safety Boiler, so-called. It was awarded a silver medal at the Exhibition of 1865, since which time it has been somewhat improved. We believe this boiler possesses all the characteristics for safety of any other cast-iron boiler known to the Committee. We award a *Silver Medal.*

25. JOSEPH A. MILLER & CO., *Boston.* American Safety Boiler. This is a cast-iron boiler, similar to No. 893. It was set in South Market Street, by the side of the Atlantic Works' tubular boiler, and furnished a part of the steam power for operating the machinery in Quincy Hall. The Committee have no means of judging whether this boiler would be economical in the use of fuel or otherwise, and they are not prepared to admit the claims of the inventor as to its absolute safety under high steam. They are of opinion that it needs to be more fully tested, and with care, before its merits or demerits can be properly judged. For the promise it gives, we award a *Silver Medal.*

944. GEO. T. MCLAUTHLIN, *Boston.* McLauthlin's Wrought-Iron Safety Steam Generator. It has an indefinite number of water tubes projecting into the fire from the lower head of a vertical boiler, all of wrought iron. In these tubes are others of smaller dimensions, reaching nearly to the bottom of the large tubes, and projecting some inches above their upper ends, for the purpose of a better circulation of the water.

The Committee examined this boiler at the works of Messrs. McLauthlin & Co., No. 20 Fulton Street, Boston. It was very finely set in brickwork, and furnishes the steam to run the works, and for others in the same and adjoining buildings. From what the Committee learned, the results of using this boiler are highly satisfactory, and they are of the opinion that it will be found to be very economical in the use of fuel, it having shown a saving of eighteen per cent. during six months as compared with a flue boiler, of which this takes the place, at the same time doing very much more work.

Mr. McLauthlin does not claim this to be a new invention. We believe it to be very durable and safe, requiring little repair. It is very excellently made. We award a *Silver Medal.*

864. John A. Coleman, Agent, *Boston.* Sections of the Harrison Safety Steam-Boiler. Part of a cast-iron boiler in globular sectional tubes, confined together by a strong bolt. The Committee think this boiler can be safely used. For economy in fuel, durability, and facility of repairs, the Committee do not consider it equal to many forms of the wrought-iron boiler. *Diploma.*

173. R. L. Walker & Co., *Globe Village.* Water Grate and Steam Generator, with two models. This is considered an important improvement. It will save fuel and cost of grate bars, and is deserving the favorable notice of parties using steam-boilers. We award a *Silver Medal.*

682. T. A. Johnston, G. M. Gibson, and J. A. Marden, *Boston.* Atmospheric Governor for Steam-Engines. This article appears to the Committee to be a good Governor for a steam-engine regulated by a throttle valve, and is a decided improvement over the old fan-governor, so-called. We award a *Silver Medal.*

868. Huntoon & Lynch, *Boston.* Three Huntoon Governors. This Governor is well known by steam-engine builders and others. Its merits have been acknowledged for some years. We consider it a valuable invention, and award a *Silver Medal.*

815. William Lincoln, *Boston.* Defrees' Steam-Engine Governor. New to the Committee, and in the absence of the contributor, they can only give it this passing notice, as its merits are not apparent without explanation.

426. Union Water Meter Company, *Worcester.* Steam Pressure Regulator. Three Steam Gongs. Three Governor and Chronometer Valves. These articles embrace nothing new. They are all well made, useful articles. *Bronze Medal.*

924. Boston Machine Company, *Boston.* Ten Steam Valves, Coffin's Patent. These valves consist of two disks, working on an

inclined plane, and operated by a screw, and thus forced steam-tight to their seats. If properly fitted, they will always remain tight. When open, they leave a passage the full size, and are decidedly an improvement over the old screw valve. We award a *Silver Medal.*

469. Peet Valve Company, *Boston.* Patent Stop Valve, for Steam, Water or Gas. This Valve was referred to the Committee after the report on No. 924 was made, and is considered by them quite as good, if not better. Like that, it has two disks, and works on two parallel, vertical planes. It is operated by a screw stem, having on the end, and between the disks, a button, by which they are raised and lowered. Between the disks, also, is a cone, in a conical chamber, and resting upon the valve shell, on a pin which is a part of the cone-piece. When the disks are at their seats, and the passage closed, and this cone pin rests on the shell of the valve, the disks are forced, by a slight turn of the stem, to a perfectly tight seat by the pressure of this cone between them, which the Committee consider a mechanical equivalent to the means employed in No. 924, having all of its advantages, and being a prior invention. We award a *Silver Medal.*

974. William H. Jackson & Co., *Boston.* Massey's Low-Water Detector. This consists of a brass tube, attached to the lower gauge cock of a steam-boiler, on the top of which is a steam-whistle to give alarm, in case the water falls below the lower cock. Inside the tube is a galvanized cast-iron rod, connected at the lower end of the brass tube by a steam-tight joint, and at the top by a valve made to open by the differential expansion of the tube and rod, caused by the heat of the steam, which takes the place of the water when it falls too low, and thus the steam sounds the alarm. The valuable feature in this Detector over others consists of the interposition of a spiral spring between the iron rod and the valve, which prevents injury by any excessive pressure caused by unequal expansion. We award a *Bronze Medal.*

699. E. H. Ashcroft, *Boston.* Low-Water Detector. Well known and good. This is improved and cheaper.

Patent Iron Globe Valves with Brass Bushings. Valves bushed with brass to prevent oxidation. Excellent article, and we award a *Bronze Medal.*

Locomotive Water Gauges. A good article and well made.

Test Pump and Gauge, for proving Gauges. Piston of Pump operated by a screw; a good arrangement.

595. **Maloy Steam Gauge Co.**, *Boston.* Four Steam Gauges. This is a new steam-pressure gauge, depending upon the elasticity of a nickel disk for the action of the steam pressure, which is communicated to a semi-elliptic spring as a resistant. It is similar to other gauges of this description.

589. **James G. Fifield**, *East Boston.* Self-Packing Coupling, for water, steam or gas. Believed to be a good article.
Diploma.

457. **John Collicott**, *Boston.* Boiler Tube Scraper. A flexible, chilled, cast-iron scraper. Expanded by spiral springs, and will be found a very good instrument for the purpose designed.
Diploma.

429. **James Ross**, *North Cambridge.* Steam Permeator, or Oil and Tallow Cup. This is believed to be a very excellent article for the purpose designed. *Bronze Medal.*

74. **H. H. Brown**, *Providence, R. I.* Anti-Friction Lining Metal. One of the varieties of lining metal; probably as good as others. We have no particulars respecting it.

477. **S. E. Chubbuck & Sons**, *Boston Highlands.* Steam-Engine Piston, with improved method of Packing. This is a strong and substantial piston packing for a steam-engine, is self-adjusting, and is supported by the piston head. It is calculated to wear well. We award a *Silver Medal.*

224. **Nathan B. Goodnow**, *Boston.* Model of Piston Packing. This is a good modification of steam piston packing for engines, for which we award a *Bronze Medal.*

171. **George E. Handy**, *Boston.* Model Improvement in Piston Packing. A steam-packed, metallic piston, for steam-engines, in which the rings are kept in contact with the cylinder, piston-head and follower, by steam pressure. *Diploma.*

730. **Wm. W. Allmand**, *Newtonville.* Self-Lubricating Steam Packing. A good Packing. It has a powdered substance combined with the fabric. It appears to be soapstone. *Diploma.*

867. **William H. Thayer**, *Boston.* Selden's Steam Packing. A good Packing for piston and pump rods. *Diploma.*

884. H. McMurtrie & Co., *Boston.* One set Wheelock's Piston Packing.

One Planer Chuck. Good tool; well made.

One Bird's Chain Pulley-Block.

Steam Cylinder Lubricators. Very well made. *Diploma.*

Five bars Lining Metal.

One case Twist Drills. Well made.

Four Tallow Cups. Well made.

Three small Chucks. A good article.

Five sides Horse Hide Lacing. Apparently good.

Sample Paper Pickers.

Three Tube Scrapers. A very good article.

995. American Portable Gas Light Co., *Boston.* Fink's Patent Improved Rubber Packing. Specimens of this packing that had been in use eighteen months were exhibited, and gave evidence of being a very superior article. We award a *Diploma.*

273. Fulton Hydraulic Works, *Newburyport.* Steam Fire-Pump, and Automatic Feed-Pump. These are a new kind of vertical steam-pumps. The steam-cylinder has the ordinary three-ported slide valves, the valve stem being operated by a double cone attached to the piston-rod. The valves of the water-cylinder are made of rubber. These and the steam-cylinder valves are easily accessible and not liable to get out of order, and are considered by the Committee a valuable addition to the variety of steam-pumps now before the public, and we award a *Silver Medal.*

238. Geo. D. Putnam & Co., *Boston.* Washburn's Patent Condensing Steam-Pumps. This Pump deserves particular notice, and is decidedly a new invention, condensing the steam required to drive it, and returning the condensed water, with the greater part of the heat of the steam used, to the boiler, thereby effecting a saving in fuel over any other steam-pump known to the judges. It is compact, well made, has no dead centres, and apparently not liable to get out of order. We award a *Silver Medal.*

884. A. S. Cameron & Co., *New York,* by H. McMurtrie & Co., *Boston.* Two Cameron's Steam-Pumps. This is very simila in arrangement of valves to other steam-pumps on exhibition. It is an excellent article, and we award a *Silver Medal.*

741. Knowles & Sibley, *Warren.* Knowles' Patent Steam-Pumps. These Pumps have been before the public and in general use for some years. We understand they have given general satisfaction, and for important improvements we award a *Silver Medal.*

853. Geo. F. Blake & Co., *Boston.* Three Steam-Pumps. These are improved and more compact than those in the last Exhibition. We consider this Pump reliable and effective, and award a *Silver Medal.*

997. P. W. Swan, *Winchester.* Small Steam-Blower Pump, on the Syphon Principle. The Committee could not put this in operation. It is a well-known article on board steam vessels and other places.

220. Joseph H. Call, *North Billerica.* Bellows for Plumbers' Use for Blow-Pipe. A good article for the purpose intended. *Diploma.*

758. B. Stetson, *Uxbridge.* Patent Tool-Post for Lathe. This is a double ball and socket tool-post for engine-lathes or slide rests. A very excellent article, admitting an indefinite variety of positions of the cutting tool. *Silver Medal.*

451. Lowell & Brett, *Boston.* Patent Reversible Stamping Presses for Stationers' Use. These Presses are a decided improvement, by which the class of work done is of great excellence and very rapidly executed. *Silver Medal.*

986. B. R. Sturges, *Binghamton, N. Y.* Leffingwell's Gas Governor. The Committee have witnessed the operation of this Governor, connected with gas-burners at the Exhibition, and from the results then apparent, they feel well satisfied of its usefulness, economy of gas and simplicity of construction, and confirm and refer to the annexed report of a Committee of Science and Art of the Franklin Institute, of Philadelphia, Pa., for a more complete description. *Silver Medal.*

The Committee of Science and Art of the Franklin Institute, Phila., Pa., to whom was referred the Leffingwell Gas Governor, report:—

That the structure and mode of action of this Governor, is as follows:— An iron circular vessel is divided across the middle by an elastic horizontal diaphragm, and has in its lower part two passages, an inlet and an outlet. The inlet is connected directly with the gasmeter, and the outlet with the

distributing pipes. The flow of gas in the inlet is controlled by a conical valve, whose stem is supported by the diaphragm, and which thus varies in position with the rise and fall of that part. Thus, when the pressure in the service pipes increases by the sudden shutting off of burners, the diaphragm rises, and partially closes the valve so as to cut off the supply; when, on the contrary the pressure decreases, the diaphragm falls, so opening the valve and giving a freer passage to the gas.

Your Committee *do not think it necessary to discuss the merits of the general system of regulation, as applied to illuminating gas.* They consider that the *economy* obtained by *regulating* the *flow* under the *varying conditions of pressure generally existing*, has been repeatedly *proved*, and is most fully *established*. The only question remaining open, and requiring their attention, is this: How does the apparatus now submitted, *compare with others in efficiency, economy and durability?*

With regard to the first point, *their own experiments*, conducted in the *Institute Building*, proved that the equality in outflow pressure, *secured by this apparatus under great variation of pressure in the mains, and of consumption by change in the number of burners in use, is most satisfactory.*

With regard to the second point, the method of structure gives *these regulators a decided advantage over most others;* little delicate workmanship or expensive material being required.

With reference to *durability*, your Committee can only form a judgment from the testimonials presented to them, and from these they *would conclude* that this instrument might *be relied upon to act well, without repair or re-adjustment*, for many years.

In conclusion, your Committee would state their opinion to be, that this instrument is, in a most satisfactory degree, efficient, economical and durable.

ROBERT E. ROGERS, M. D, *Prof. of Chem., University of Pa.*
HENRY MORTON, M. D., *Secretary Franklin Institute.*

SUB-COMMITTEE, No. 2.

LOCOMOTIVE AND RAILWAY MACHINERY.

JOHN THOMPSON, JOHN SOUTHER,
HENRY W. WILSON.

537. BAY STATE IRON CO., *Boston.* Bar of Railroad Iron with Cast-Steel Top and Fibrous Iron Base. This Rail is composed of a cast-steel top and iron base. Its novelty consists in the quality of the steel, possessing properties which enable it to stand a heat sufficient to weld with iron, without a flux. It is claimed to be superior to *all steel* or *all iron*, and that it has the durability of all steel, and the tenacity and flexibility of all iron.

It has the appearance of being well united, and the tests applied to it have been such as to prove that it has the qualities so much desired, that of being homogeneous and durable, and of such tenacity as to make it free from the liability of breaking.

In consideration of the fact that the iron-masters of the world have used their utmost endeavors to produce such an article at a cost that would be within the financial ability of even the most affluent corporations and have not succeeded, we think that the Bay State Iron Co., for their successful manufacture of an article so desirable, are entitled to a *Gold Medal.*

406. BENJAMIN ROBINSON, *Boston.* Improved Railroad Rail. These Rails are scarfed at the ends, having projections upon the scarfed side to fit corresponding grooves for the purpose of locking the same. They would be very expensive to manufacture, and would not be an improvement upon the common rail.

472. ISAIAH TILLSON, *South Abington.* Railway Chair, with Section of Rail in Chair. Too complicated to be practical.

487. WM. SHERBURNE, *Charlestown.* Model of Railroad Journal Box,—the "Boulton" Box. This is a well-made model, but is apparently no improvement upon the "Lightner" Box.

737. BOSTON FORGE CO., *East Boston.* Main Locomotive Axle, Truck and Tender Axles, Connecting, Parallel and Eccentric Rods, Valve Stem, Rocker Arm, and Half and Whole Windlass Necks. These forgings are excellent specimens of workmanship. *Bronze Medal.*

13. JOHN VIALL, *Somerville.* Downward Draft Locomotive Spark and Smoke Conductor. The Committee do not think it an improvement upon those now in common use.

851. DAVID S. NEAL, *Lynn.* Model of Railroad Turn-Table. Designed to turn locomotives when placed upon the table, by turning the drivers of the locomotive by steam, thereby revolving the table.

A very ingenious and well-made model, but rather complicated. *Diploma.*

635. B. F. DELANO, *Boston.* Machine for Clearing Snow from Railroad Tracks. The Committee believe that it will not answer the purpose for which it was designed.

80. JOHN DAVIS, *New Bedford.* Patent Nut Lock. This is a

method of keeping the nuts from turning upon the bolts of an iron or wood splice upon the rails of a railway, and is very good.

63. WM. H. MASON, *Boston.* Improved Railroad Car Wheel. A novel pattern of cast-iron wheel, with very light corrugated arms. Not free from the liability of having a strain upon it, caused by cooling in manufacture. Do not think it as strong as wheels of the ordinary pattern.

849. C. L. HEYWOOD, *Boston.* Bridge Guard. A light movable crane, so arranged that in coming near to an overhead bridge, persons on top of the car may receive warning before striking the bridge. *Diploma.*

436. ANDREW TOWER, *Charlestown.* Model of Car, with Smith's Improved Coupling. This model shows a method of coupling railway cars without the necessity of standing between them. The Committee do not think it an improvement upon the old method of link and pin.

265. R. S. MINER, *Boston.* Car Coupling. One of the many devices for coupling cars with safety. Do not think it an improvement.

572. A. MCLEAN, *Boston.* Car Couplings. Not an improvement upon those in common use.

473. ALBERT BRIDGES, *New York.* Ball's Patent Telescope Jack-Screws. The well-known form of jack-screw, with right and left screw, operating quickly but not powerfully.

251. STEVENSON, PEARCE & CO., *Harmony, Pa.* Stevenson's Steam-Balanced Slide Valve for Locomotive, Marine and Stationary Engines. The Valves are somewhat complicated, yet have the appearance of possessing some real merit; but without a practical test, the Committee are unable to determine their real value.

701. JOHN WILEY, *South Boston.* Model of Car Brake and Starter. Very nicely prepared model; very complicated, and of questionable utility.

79. GEORGE W. SPAULDING, *Taunton.* Safety Switch. A common railway switch.

486. G. L. BAILEY, *Boston*. Improved Switch for Street Railroads. A new device by which it is proposed to enable the driver to control the direction of the car. In the absence of a thorough test upon our travelled thoroughfares, the Committee can only say that its advantages and disadvantages appear to be about evenly balanced.

SUB-COMMITTEE, No. 3.

MACHINISTS' TOOLS AND MACHINES.

Z. E. COFFIN, ARTHUR B. UNDERHILL,
LOUIS OSBORN.

599. AMERICAN TOOL AND MACHINE CO., *Boston*. One Turret Lathe, One No. 1 Square Arbor Lathe, One Valve Milling Machine, Four Slide Rests, Five Chucks. In this lot of tools the Turret Lathe deserves more than a passing notice, it being one of the best of the many useful and excellent inventions and improvements brought out by the superintendent of this company, Mr. Radford; and some of the Committee, from practical tests in their own shops, say that it is as near perfect as a machinist tool may be expected to be made. The Square Arbor Lathe has been somewhat improved since its last exhibition, and is an excellent machine. The Valve Milling Machine is a new design, and is a perfect machine of its kind, which needs only to be tested to be appreciated. The Slide Rest and Chuck are a fair exhibition of the work of the Company, but have been exhibited on a former occasion. *Gold Medal.*

199. J. S. WHEELER & CO., *Worcester*. Engine Lathe and 3-ft. Planer. A fair grade of tools, the proportions being good and the work quite well done. The castings are well cleared and painted. On the Lathe is a tool post of novel design, and worthy of notice. *Bronze Medal.*

439. UNION MACHINE CO., *Fitchburg*. Engine Lathe and Counter Shaft. A fair lathe, well proportioned, and workmanship good. *Bronze Medal.*

450. NEW YORK STEAM ENGINE CO., *Worcester*. Engine Lathe, Shaping Machine, Planing Machine, Lathe and Planer. Fair tools, workmanship good. The Shaping Machine is of good design and workmanship, and in all respects an excellent tool. It should be in all machine shops. *Silver Medal.*

250. JAMES STEWART'S SON, *New York*. Foot Lathe, Head Stock, and Rest. Made of bronze, proportions good, and very prettily finished. Some of the fittings not the best. A very showy article. *Silver Medal.*

169. WILLIAM THOMPSON, *Worcester*. Model of Lathe Rest. An invention of some value. If well made would work well. *Diploma.*

869. JOHN HUMPHREY, *Chicopee Falls*. Combination Screw-Cutting Lathe. An ingenious device by which the inventor hopes to save time in changing gears to cut screws. In the opinion of the Committee, not of much value.

149. MORSE TWIST DRILL AND MACHINE CO., *New Bedford.* Machinists' and other Tools. A case of Twist Drills, Reamers, Chucks and Arbors, of excellent design and superior workmanship. The Twist Drills made by this company received a Silver Medal at the last Exhibition. The Committee now award for the display a *Gold Medal.*

776. AMERICAN STANDARD TOOL CO., *Newark, N. J.* Twist Drills. A case of beautiful Drills, of sizes from two inches die, to less than one-twentieth of an inch. Well worthy of notice. *Silver Medal.*

253. M. M. AMMIDOWN, *Boston*. One Upright Drill. Good design, well made, and well adapted for the work for which it is designed. Would be better if the bevel gears on the spindle were much stronger, but on the whole a very good tool. Workmanship apparently good. *Bronze Medal.*

828. MOORE & WYMAN, *Boston.* Upright Swing Drills, twenty-eight and twenty inches. Very good drilling machines for common use. Not highly finished. Received Bronze Medal at the last Exhibition. The Committee now award a *Diploma.*

6. EDWIN M. MONTAGUE, *Boston*. Universal Drilling and Boring Machine and Angle Clamp Drill. A good portable hand-drilling machine, suitable for light work and adapted to a variety of circumstances. Not highly finished. *Diploma.*

107. TARBELL & HARTFORD, *South Boston*. Four Patent Bow Drills. Pipe and Rod Cutter. These Drills are so made that motion either way given to the bow turns the drill always in the same

direction, and never gives it a backward motion, causing the drill, when properly ground, to cut continuously, and much faster than by the common bow. A very good device for the kind of work it is designed to do.

The Pipe and Rod Cutter, in careful hands, would work well, but would not stand the ordinary usage of pipe-cutting. *Diploma.*

640. MARCUS A. HARDY, *Cambridge.* New Mechanical Movement Bow Drill.

223. EAGLE CHUCK Co., by A. J. SCOTT, AGENT, *Woonsocket, R. I.* Drill Chuck. An ingenious device for holding drills, but not so good as others in use.

914. W. F. BACON, *Skowhegan, Me.* Two Portable Chuck Jaws. A good and useful article, worthy of notice.
Bronze Medal.

303. LOWELL WRENCH Co., *Lowell.* Moore's Triple-Action Ratchet Wrench Drill. Of good design, well made, and well adapted to meet the demand for a cheap ratchet drill or wrench, but not quite suitable for hard service. *Bronze Medal.*

965. GEO. D. HARRIGAN, *North Somerville.* Model of Wrench. Novel device, but of no great value.

282. A. H. BRAINARD, *Hyde Park.* Standard Milling Machine. A very elaborate machine, adapted to a variety of jobs. *Diploma.*

904. J. W. HASKELL, *Boston.* Boring and Thread Tool. A good tool, and very useful, especially in small shops. It enables those deficient in forging facilities to make their own tools, by using small steel instead of drawing large steel in the common way, and also to economize in the quantity required. Deserves notice.
Bronze Medal.

609. PRATT, WHITNEY & Co., *Hartford, Conn.* Two pair Planer Centres. Not a new invention, and requires no special notice. Very useful tools, and the workmanship is apparently good.

633. N. C. STILES, *Middletown, Conn.* Two Power and one Foot Punching Presses. The Power Presses have a novel device for clutching and unclutching the crank shaft, and for adjusting

punch and dies. The workmanship is good. The press received a Silver Medal at the last Exhibition.

The Foot Punch is also a very good machine of its kind.

Silver Medal.

147. CHARLES WARD, *Salem.* Patent Reversed Screw. This case of Screws was exhibited in 1865 as No 134 of that Exhibition. Nothing new or particularly fine as to workmanship.

845. POST & GODDARD, *New York.* Case of Taps and Dies, Augur-Bits and Sheep Shears. All the articles in this case are well adapted to the work for which they were designed. The Taps are so made as to work easy and wear well. The workmanship is excellent. It may be said of all the tools in this case that they are, in all respects, first-class. *Gold Medal.*

847. GERARD SICKELS, *Boston.* Model of Balance Valve for Steam or Water. Of novel device.

325. J. F. ROSS, *North Cambridge.* Clamp Dog for tapering work. A useful article, but neither new in design nor highly finished.

SUB-COMMITTEE, NO. 4.

WOOD WORKING MACHINERY.

JAMES H. ROBERTS, CHARLES H. HERSEY,
ALONZO WARREN.

39. JOS. A. TALPEY, *Somerville.* Self-Feeding Hand Sawing Machine, with Jig Saw attached. The Saw is a valuable invention for use where workmen have not the advantages of steam power. It is operated by a crank, and the saw in cutting presses the wood up against the feed roll, so that but little power is exerted to operate the feed. A Silver Medal was awarded at the last Exhibition.

The Jig Saw is operated by a spreader working between a pair of straps which are attached at one end to the saw, and secured at the other end to the frame. The spreader being worked by a foot motion alternately lengthens and shortens the straps, thus giving a reciprocating motion to the saw. We award a *Silver Medal.*

159. J. M. MARSTON, *Boston Highlands.* Hand Sawing Machine. This Machine does good work, but does not differ essentially from old devices for the same purpose.

672. A. S. & J. GEAR & Co., *Concord, N. H.* Balanced Jig Saw. This Saw has an arrangement by which the saw can be fastened or disengaged with great rapidity by means of a lever, and is balanced by the gate, or levers, which hold the saw, extending beyond the fulcrum so as to balance themselves. Award *Bronze Medal.*

Also exhibit several valuable improvements in Irregular Moulding Machines, including a Cutter Guard, for preventing accidents to the persons working them. Award *Bronze Medal.*

671. ELISHA ROBBINS, *Worcester.* Balanced Jig Saw. This saw is balanced by a weight corresponding to the saw-gate, being operated in an opposite direction to the saw with the same stroke, and moving in guides. It is claimed that it prevents the vibration usually attending the working of jig saws. Award a *Bronze Medal.*

743. W. W. HUBBARD, *Manchester, N. H.* Jig Saw. With yielding slides to compensate for the shortening of the gate by springing when the cut is made. The upper cross bar of the gate is adjustable for different lengths of saws. The machine is very nicely finished and possesses much merit. Award a *Silver Medal.*

322. WELCH, HARRISON & Co., *Boston.* Band Sawing Machine. This Machine has an endless belt saw, running over pulleys guided by rubber rolls revolving against the side of saw, and steel roller against the back edge of same. It also has an arrangement for canting the pulleys over which the saw runs, to make the saw run with teeth projecting over the edge of said pulleys. Award a *Silver Medal.*

444. GEORGE THOMPSON, *Nashua, N. H.* Endless Belt Saw. This saw consists of an endless saw running over friction rollers, so arranged that they can be adjusted to make the saw take, at the part where the cutting is done, any circle of 6 inches to 30 feet diameter, and sawing a corresponding curve. Award a *Silver Medal.*

684. J. P. GROSVENOR, *Lowell.* Adjustable Circular Saw. This saw is so arranged that it can be adjusted to cut at different angles. Award a *Bronze Medal.*

747. Joseph F. Paul, *Boston.* Machine for Cutting Veneers. The wood is placed on centres which are revolved by means of a worm gear, carrying with them the log. The cutting knife is brought up to the log by the cross head or carriage to which it is attached, being moved by a screw feed operated by a hand wheel. Award *Silver Medal.*

366. D. H. Priest & Co., *Watertown.* Mortising Machine. This Machine is worked by hand, and is secured to the wood by clamps quickly adjusted. Will mortise any desirable size without any boring. Award *Bronze Medal.*

20. Witherby, Rugg & Richardson, *Worcester,* by H. McMurtrie & Co., *Boston.* Tenon Machine. This Machine not being in operation, your Committee are not able to judge fully of its merits.

Also exhibit a roll of Belting made from Paper, which requires a test of use to determine its utility.

290. Charles Spofford, *South Boston.* Wood Planing and Surfacing Machine. This Machine combines all the apparatus necessary for planing boards or timber to a thickness; is self-feeding, with iron surfacing tables for planing stock out of wind. It is a strong, durable machine, well adapted to the work. Award *Silver Medal.*

551. Asahel Davis, *Lowell.* Surface Planing Machine. This Machine, compact and simple in construction, will surface and plane to a thickness. The thickness can be varied by the bed being brought up towards or removed from the cutting cylinder, by a screw operated by a hand wheel. Award a *Bronze Medal.*

740. Charles Buss & Son, *Marlborough, N. H.* Wood Planing Machine. This machine is well made. It has a reversible feed, is very compact, and does excellent work. Award *Silver Medal.*

710. S. A. Woods, *Boston.* Saw Grinding Machine. A very good device for sharpening circular and straight saws, by means of a revolving emery wheel. Award *Silver Medal.*

Also Wood Moulding Machine, with two vertical and two horizontal cutting cylinders, so arranged as to be quickly adjusted to the cut, with improved pressure bar. It also has an improved feed, which can be regulated to suit the work being done. The machine is very nicely made, and is deemed worthy of a *Gold Medal.*

Also exhibits a Saw Arbor, with Self-Oiling Box, and device for securing saws, with different size holes upon the same arbor.

Also, a Self-Oiling Loose Pulley, for which we award a *Diploma.*

659. E. J. Arenes & Co., *East Cambridge.* Grosvenor Elliptical Moulding Machine. This machine not being in operation, your Committee are unable to judge intelligently of its merits.

260. E. B. Rich, *South Boston.* Machine for Sharpening Saws. This Machine is simple in construction, the work being accomplished by a revolving emery wheel, controlled by the operator by means of a hand lever. It being nicely balanced, the saw can be set at any angle to give the proper form to the tooth. Award *Silver Medal.*

664. Henry Baker, *Portland, Me.* International Saw Sharpener. This Machine consists of an ordinary grindstone, with frame work for holding saws. Not being in operation, we are unable to judge of its merits.

99. Joshua T. Kendall, *Concord, N. H.* One Model Hub Boring Machine. This Machine is so arranged that it will centre the wheel, and fit any size box, so perfectly that it requires no wedges; the wheel, as well as the cutter revolves at the same time. Award a *Bronze Medal.*

11. S. F. Leach & Elder, *Chelsea.* Three Patent Saw Sets. Operated by hand and foot, doing the work quickly and well. Award *Diploma.*

Also exhibit a Model Mill Saw Frame, with arrangement for giving draft to the saw. Not considered practicable.

154. Willard E. Sibley, *Waltham.* Dove-Tailing Machine. This Machine makes a strong dove-tail, novel in form; is a simple and cheap machine, and works with great rapidity. Award *Silver Medal.*

156. Wood, Humphrey & Co., *Boston.* Dove-Tailing Machine. Makes a triangular dove-tail of a peculiar form. This machine is very compact, well made, does good work,—the work done on it matching with great accuracy. Award *Silver Medal.*

388. G. A. WALKER, *Boston.* Self-Oiling Saw Arbor. A very good device for supplying with oil the bearings of saw arbors. Award *Bronze Medal.*

SUB-COMMITTEE, No. 5.

METAL-WORKING MACHINERY, IRON AND STEEL, HOISTING MACHINERY, SAFES AND LOCKS.

BENJAMIN F. RADFORD, CHARLES WHITTIER,
GEORGE M. BIRD.

58. HUMPHREY BROTHERS, *Boston.* Machine for Making Tubing from Sheet Metal. This Machine is now exhibited for the first time, and is capable of performing the work of fifty men employed in the ordinary manner, and produces a more perfect tube of the kind, than is made by any other machine now in use. We consider this a very valuable invention, and, in our opinion, worthy of the highest award which the Association can bestow. *Gold Medal.*

The same parties exhibit a Machine for Shearing Brushes. A new application of a well-known cutting device. A simple and practical labor-saving machine. Award *Bronze Medal.*

660. REED & BOWEN, *Boston.* Combined Machine for Cutting, Punching and Bending Iron, Upsetting Tires and Gumming Saws. A remarkably powerful and convenient Machine, adapted to a great variety of work, and we believe destined to come into general use in carriage and blacksmith shops. As this is merely a combination and concentration of old and well-known devices for performing the same labor, we cannot, without ignoring our instructions, recommend the highest award, which otherwise would perhaps be well bestowed. *Silver Medal.*

529. MEAD & ADDY, *Boston.* Screw Press for Punching Metals. They show a Punching and Stamping Press, recently improved by a new method for connecting the screw with the slide, thereby making the press more simple, compact and cleanly. They also have a new device for reversing the upper and lower dies—a feature very essential in stamping envelopes and note paper. The machine is well made, and in view of its extended use, we consider it worthy of favorable notice. *Bronze Medal.*

41. LEONARD B. WILDER, *Boston.* Clark's Patent Lead Cutter. A very convenient machine for cutting lead slips for printers' use. The best in the market. *Diploma.*

47. Brigham, Whitman & Co., *South Abington.* Blanchard's Tack Machine. This is the first exhibition of the Machine in its present improved form. The improvements consist in making the parts more compact than formerly, as well as giving more strength and greater facility for adjusting its working parts. It is well made, and appears to be quite perfect. There are upwards of forty of these machines in successful operation, and we believe it deserving of favorable notice. *Silver Medal.*

183. J. S. Evans, *Berkley.* Models of Lock for Dumping Tub and Pan for Pig Iron. A convenient and simple device for the purpose; has considerable merit, and we recommend the award of a *Bronze Medal.*

194. A. J. Roberts, *Boston.* Model of a Horseshoe Machine. Possibly a practicable scheme, but as the exhibitor shows a model only, we deem it imprudent to recommend any award, as there is no surety that a working machine would prove a success.

229. T. D. Bauer and E. Walcott, *Boston.* Model of Wire Suspension Wheel. An ingenious and novel device for suspending the load from that portion of the wheel which is uppermost, bringing a tensional strain upon the wires which form the spokes of the wheel. In the absence of an actual test with full-sized wheels, we can form no just estimate of its practicability.

210. Anderson & Woods, *Pittsburg, Pa.*, by Leeds, Robinson & Co., Boston. American Steel. This firm exhibit a case of hardware and edgetools which present a good appearance. Your Committee can express no decided opinion as to their real merits, which can only be determined by actual use. They also show some specimens of hammered cast-steel which are certainly very fine samples of workmanship, and have all the indications of superior quality. The exhibitors afforded us an opportunity to test some of the bars—a privilege that was embraced by us. We desire to state that in all respects it appears to be fully equal to any steel ever brought to our notice. We would respectfully suggest, that as steel manufacturing is an enterprise that is of vital importance to American mechanics, and is particularly deserving of encouragement, that you award to these exhibitors the highest premium in the gift of the Association.

While recommending this, we do not wish to say this particular steel is, in our opinion, the best production of American manufacture, but that it has the best appearance, and is the only steel that we had liberty to examine, otherwise than superficially.

Gold Medal.

8. Boston Machine Co., *Boston.* Dickson Derrick and Appurtenances. The model works well, but an actual test of the appliance on a large scale would be required to enable your Committee to express an opinion as to its practical value as compared with the common wheel and pinion derrick. *Diploma.*

208. F. P. Canfield, *Boston.* Improved Self-Sustaining Hoisting Machine. This is exhibited only as a hand machine and is a valuable improvement on the common hoisting drum with spur wheel and pinion. The chief merit of this machine is in an apparatus for sustaining the load at any point of elevation. We judge it to be perfectly reliable, and deserving of favorable notice from the Committee. *Silver Medal.*

661. Baldwin Elevator Safety Co., *Boston.* Patent Safety Stop for Elevators. Exhibit an appliance for arresting the descent of the platform on the breaking of the rope. The plan seems to be quite perfect and reliable.

They also show a device to prevent the rapid overhauling of the elevator, which is almost certain to occur, when the belt breaks, or slips. This is undoubtedly an excellent plan and sure to produce the desired result.

All efforts in this direction tend to the further protection of human life, and have strong claims to encouragement. We would respectfully request, that your honorable body grant as high an award as the most liberal construction of the rules of the Association will admit. *Silver Medal.*

248. American Steam Fire-Proof Safe Co., *Boston.* Steam Fire-Proof Safe. We believe this safe "will preserve its contents uninjured in a fire that would entirely destroy the same or similar safe without the improvements." The fire-proof quality of this safe is secured by placing water, in copper vessels, between the inner wall of the safe and the book-case, so that when exposed to fire, steam is generated, carrying off the heat and protecting the contents of the safe. We consider this a most valuable invention and deserving the highest award. *Gold Medal.*

606. E. R. Morse, *Boston.* Fire and Burglar-Proof Safe. Exhibits a valuable improvement in the burglar-proof "treasure

vault" inside the safe. The improvement consists in placing or forming a "flange" on the door, said flange shutting into a corresponding groove in the door frame. An effectual safeguard against the use of wedges. A most excellent safe of superior workmanship.
Silver Medal.

1004. TILTON & MCFARLAND SAFE MANUFACTURING CO., *New York.* Burglar-Proof Safe. In his efforts to produce a burglar-proof safe the inventor has evidently made a long stride in the right direction. This safe is no copy of those in general use, but is quite original; the outer shell or frame (with well rounded corners) being one continuous band of iron and steel, welded together at the ends; the front and back being secured to this shell, in a remarkably strong and ingenious manner. All the bolting is done from the inside, and the points of the steel bolts are hardened. Taken as a whole, it is the most formidable obstacle ever placed between the "burglar" and his coveted treasure. We recommend the award of a *Gold Medal.*

317. H. HALL, *Boston.* Patent Bank Lock. A lock of fair workmanship, for exhibition only.

336. B. F. DICKASON, *Chelsea.* Bank Lock.

454. E. M. MCPHERSON, *Boston.* Isham Key Register Bank Lock. Recently improved by a change in the "latch," making the latch in such a way that it cannot be moved by any instrument inserted from without. This lock presents greater obstacles to burglarious skill than any other coming under our notice. It appears to be thoroughly unpickable, stronger than any other, less liable to get out of order, has no springs, and is more secure against dishonest insiders and outsiders, because the locking apparatus is detachable. We recommend the award of a *Silver Medal.*

557. PICKFORD & HOLLIS, *Boston.* One Bank Lock. Although well made, this lock does not appear to be equal to several others submitted to our inspection.

571. C. SQUAIRES, *Boston.* Sargent & Greenleaf's Magnetic and Automatic Bank Locks. These locks are of superior workmanship, practicably unpickable, and fully equal, if not superior, to any "Dial" lock in use. We recommend the award of a
Silver Medal.

573. W. Hall & Co., *Boston.* Bank Locks. An improvement on a lock which has been exhibited before. Shows a method of securing the stationary "hub" for the dial-stem to the frame, effectually preventing its being wrenched off, thereby giving additional security. *Bronze Medal.*

Lava Knobs. The new feature of which consists of the insertion of metallic bearings in the "Lava" while plastic, making the articles much more durable at the points most liable to wear. *Diploma.*

922. L. M. Ham, *Boston.* Patent Prison Door Lock. This is a new invention, and is a meritorious one, accomplishing its purpose in a very satisfactory manner. Is exceedingly strong and simple in its construction, and very convenient in its application. We consider it worthy of special favor. *Silver Medal.*

Sub-Committee, No. 6.

SEWING AND KNITTING MACHINES.

Lucius A. Cutler, Irah D. Spaulding,
Nathan C. Lombard.

126. C. A. French, *Boston.* Two New Novelty Sewing Machines and Table. This Machine is of the cheap class of single-thread machines, making the chain stitch. Simple in its construction. Workmanship rather ordinary. These machines are furnished at such a price as to bring them within the reach of almost any family. Your Committee recommend a *Bronze Medal.*

135. Plummer & Wilder, *Boston.* Five "Elias Howe" Sewing Machines, with Tables. These machines are among the oldest and best double-thread machines in the market, and in former years have received from this Association Gold and Silver Medals. Since the last Exhibition, several important improvements have been made, which entitle them to a favorable notice. *Bronze Medal.*

211. John G. Folsom, *Winchendon.* Two Folsom Sewing Machines. Under this number are exhibited a single-thread machine making the same stitch as the "Willcox & Gibbs," and a double-thread machine, making an elastic lock-stitch. The single-thread machine is an improvement upon the "Globe" machine exhibited by Mr. Folsom in 1865, and for which he was awarded a

Silver Medal. Both of these machines are simple in construction, well made, beautiful in finish, and afforded at a low price. Run very easy and still. For the double-thread machine your Committee recommend a *Silver Medal.*

349. HANCOCK SEWING MACHINE COMPANY, *Boston.* Three Bartram & Fanton Sewing Machines. These machines are of the single-thread class, making the elastic chain-stitch, very much resembling the "Willcox & Gibbs" in general appearance, and of about the same grade of workmanship, but differing somewhat from it in the arrangement of its mechanism. Does good work, and compares favorably with other first-class machines of the kind. *Bronze Medal.*

420. FOSTER & RICHARDSON, *Boston.* Three Florence Sewing Machines, and samples of work. This Machine is too well known to need a detailed description from this Committee. It was exhibited here in 1865, and was awarded a Silver Medal. Since then it has sustained its well-earned reputation, and enjoys a large share of public patronage. Not entered for a premium.

499. A. B. LINCOLN, Agent, *Boston.* Two Willcox & Gibbs Sewing Machines with Tables, and two without. This Machine has been exhibited twice at least before at the fairs of this Association, and was awarded a Silver Medal at the ninth Exhibition. It is too well known to need any extended description here. Suffice it to say, that it still ranks as one of the best, if not the best, of the kind in the market. *Diploma.*

628. NICHOLS & BALDWIN, *Boston.* Four "Improved Howe" Sewing Machines. These Machines are the "A. B. Howe" machines, never before exhibited here, although they rank among the oldest machines in the market. They resemble very much the "Elias Howe" machine, and do about the same class of work. A very well made machine, and said to be extensively used as a manufacturing and family machine. *Silver Medal.*

656. EMPIRE SEWING MACHINE COMPANY, *Boston.* Four Empire Sewing Machines. These Machines, although they have been in the market for some years, and are quite extensively used for manufacturing purposes, and also as family machines, have never before been exhibited at the fairs of this Association. They are very well made, running very light, as the power to drive the

needle is applied directly to the needle-bar by a cam, acting upon a friction truck mounted upon a pin set in the needle-bar. The Company exhibited one machine in Section 7, running by power at a speed said to be twelve hundred stitches a minute, and sewing thick, heavy leather. After a thorough examination, and without in the least detracting from the merits of any of the well-known machines exhibited here, your Committee are of the opinion that the Empire Machine is one of the best, for manufacturing purposes and for family use, deserving of a large share of public patronage. We recommend a *Silver Medal.*

793. S. R. MARSTON, *Boston.* American Button-Hole, Over-Seaming and Sewing Machine Combined. This is a new invention, which is fast working its way into public favor, and is destined, without doubt, to take a front rank among first-class family sewing machines. Combining as it does in one machine, the ability to do all the various kinds of plain and fancy sewing done on any first-class machine, and also the working of button-holes and over-seaming, neat in design, well made, of good material, and requiring but a very few moments to change it from a button-hole machine to a plain sewing machine,—your Committee deem it well worthy of the highest premium in the gift of this Association, and award a *Gold Medal.*

820. J. Q. & G. W. ADAMS, *Boston.* Three Davis' Sewing Machines. This is another new candidate for public favor, this being the first time it has ever been exhibited in this State. The principal feature of novelty is the "feed." This, the inventor terms a "vertical feed," and it consists in the use of a vertical feed-bar, having a bearing alongside of the needle-bar in the head of the machine; the said feed-bar having an up and down motion imparted to it, while the lower end, resting upon the cloth, has a lateral motion applied to it at the proper time to move the fabric along, this motion taking place while the needle is inserted in the goods, and the needle moving with it so that there can be no slip of the goods. It is claimed by the inventor that this feed has great advantages over any feed placed beneath the table, especially in sewing over-seams, and sewing from a thin to a thick material, which claim seemed to be substantiated by the tests to which it was subjected before your Committee. We think it well worthy of favorable notice, and award a *Silver Medal.*

760. HENRY B. METCALF & Co., *Boston.* Embroidering Machine. This is a new invention, designed for a manufacturing

machine, to be used for embroidering lace and muslin curtains, and other similar goods, in the piece. The machine exhibited is the first machine built, and as a consequence is somewhat crude in its design and construction. It is worked upon an entirely new principle, that of traversing the sewing and embroidering mechanism over stationary goods; the sewing mechanism being guided over the work, and turned so as to sew in any direction, by the hands of the operator, while the goods being operated upon remain stationary. Your Committee believe this to be a desirable point to gain in embroidering piece goods for the market, and that the invention is worthy of favorable notice. This machine being of foreign manufacture, no award, according to the rules, could be made.

832. J. J. COBB, *Boston*. Two Sewing, Embroidering, Gimp and Fringe Machines. These are the same Machines that were exhibited in 1865 by Jane Grey, and for which a Silver Medal was awarded. They are very good machines, doing quite a variety of fancy embroidering, and may also be used for doing plain sewing. Your Committee recommend a *Bronze Medal.*

629 and 724. CHARLES PAGE, *Boston*. Tuck Marker and Hemmer. This is a device designed to be attached to any sewing machine, to mark the cloth where it is desirable to fold the same to form a tuck, and also serves the purpose of smoothing out the cloth and keeping the two pieces of the cloth even. The inventor claims that it has some nine or ten points of advantage over all others, all but two of which your Committee failed to discover. We recommend a *Diploma.*

799. PRATT, WHITNEY & Co., *Hartford, Ct.* Morehouse & Heath's Tucker and Plaiter for Sewing Machines. This is a neat and convenient attachment, applicable to any sewing machine, and designed to fold and gauge a tuck, so that a series of tucks may be laid of even widths and equal distances apart, without the trouble of basting. It seems to perform all that is claimed for it in a satisfactory manner. *Bronze Medal.*

999. ELIHU WILDER, *Springfield*. Wilder's Patent Adjustable Hemmer and Guide. A good device for gauging the width of wide hems. Works well. *Bronze Medal.*

261. FRANK TRIPP, *Boston*. Hall's Treadle Attachment to Sewing Machines. This is a new and important invention, designed

to reduce the labor of running sewing machines, and is equally well adapted to driving any light machinery by foot power. The use of the crank is entirely dispensed with, so that there are no dead points. The whole power needed to drive the machine is applied by the downward motion of the toe, the foot pivoting upon the heel, and entirely doing away with the old heel-and-toe movement. The machine cannot be run in the wrong direction, so that the old trouble of being obliged to take hold of the balance-wheel with the hand, and give the machine two or three revolutions before the foot can be made to keep time with the motions of the crank, is entirely avoided. A machine may be run very much faster with the same number of motions of the foot, than with the old arrangements. The foot may make a long or a short motion, as best suits the operator. She can use either foot alone, or both moving together, or alternately. In the opinion of your Committee this is a very valuable invention, destined to come into very general use; and as they think that all inventions which reduce to any considerable extent the labors of the overtasked female operatives of the present day should be encouraged, they would recommend a *Silver Medal.*

464. E. Strain & Co., *Boston.* Case of Machine Needles. This case contains an assortment of all the various styles of sewing-machine needles, and are fine specimens of workmanship.

Diploma.

829. Joseph B. Blanchard, *Boston.* Patent Improved Sewing-Machine Needle. This is what is termed by the exhibitor a self-threading needle, it being so constructed that it can be threaded in the dark or with the eyes closed, by taking the thread between the thumb and forefinger of both hands, and, holding the thread extended, placing the thread against the side of the needle above the eye, slipping it down until it drops into the eye. It is really an ingenious device, but your Committee are in doubt whether it will stand the test of every-day use, from the fact that the needle is weakened at the eye by having the stock cut entirely away at one side. *Diploma.*

468. A. B. Lincoln and A. J. Thompson, *Boston.* Sewing Machine Table, with Patent Cover and Platform. This is a new invention, especially adapted to that class of sewing machines which have the cloth-plate raised some distance above the level of the table; the platform being arranged to slide to one side, while the cover is divided in two parts and hinged together so that the part

resting on the platform may be turned over on to the other part, and the whole moved to one side, so as to be out of the way of the operator. It seems to be a very good arrangement for the purpose for which it is designed. *Bronze Medal.*

650. Amos Whittemore, *Cambridgeport.* Motive Power for driving Sewing Machines. A device consisting of a train of gearing, consisting of some six or eight gear wheels, driven by a pawl acting upon a ratchet wheel, said pawl being actuated by a back and forth motion of the operator's seat. Although novel in its arrangement, it is considered by your Committee comparatively worthless for the purpose of driving sewing machines.

201. A. Carsley, *Boston.* Hinkley Knitting Machine. This is a new invention, quite simple in its construction, using but one needle, somewhat like a curved sewing-machine needle, and a looper which transfers the loop from the needle to the comb on which the work is set up. Seems to do very good work, but somewhat limited as to the amount and kinds of work it can do. *Bronze Medal.*

624. Lamb Knitting Machine Manufacturing Co., *Chicopee Falls.* Family Knitting Machine. This Machine was exhibited at the fair of this Association in 1865, and was awarded a Gold Medal. It still sustains its well-earned reputation as a family machine. Several very important improvements have been made upon it since that time, by which it has been made available as a manufacturing machine. The machine is well made and does a great variety of styles of work in a superior manner. For their valuable recent improvements, we award a *Silver Medal.*

937. Bickford Spinner and Knitting Machine Co., *Boston.* Under this number two distinct inventions are exhibited:—

First. The Bickford Spinner. A Spinning Machine designed to supersede the old hand spinning-wheel, universally used in the days of our grandmothers, and to some extent, in the rural districts, at the present day. It is so constructed that the operator can sit in a chair with her foot upon a treadle, and revolve the spindle, drawing out the thread till it is sufficiently twisted, when, by simply touching a small lever, the motion of the spindle is reversed, and the thread is wound upon the bobbin without changing the motion of the treadle. Well worthy of notice. *Diploma.*

Second. The Bickford Knitting Machine. This is a new invention, and is of the circular class, simple in construction; consisting of a stationary grooved cylinder which holds the needles; a revolving ring, on the inner face of which is a cam that moves the needles up or down, with a thread carrier attached to said ring, a pair of bevel gears, and a crank. It is very rapid in its operation and does a great variety of work, as was proved by the case of samples shown. In the opinion of your Committee, this is an invention of merit, worthy a favorable notice, and they award a *Silver Medal.*

SUB-COMMITTEE, No. 7.

WATER WHEELS, PUMPS, WATER METERS AND HYDRAULIC MACHINERY.

HIRAM F. MILLS, F. L. BAILEY,
N. HENRY CRAFTS.

WATER-WHEELS.

Until quite recently there have been used in New England two general classes of water-wheels, having a vertical shaft, viz.: those able to render from seventy-five to eighty-eight per cent. of the power of the water applied, and those able to render from fifty to sixty-five per cent. Between these wide ranges the demand was for a long time unsupplied. The former class were too expensive for general adoption and the latter too wasteful of power. Within a few years several wheels have been introduced, combining some of the essentials of the more expensive class with the cheapness of the poorer class, and are in great demand upon our water-powers which are in the process of development.

Most of the wheels upon exhibition are of this intermediate class; none of them can be commended as first-class wheels, but they are generally designed with more care than formerly, and with greater regard for correct principles. For a clearer understanding the judges would classify wheels, as follows:—

Class No. 1.—Those which will render in their most favorable conditions from eighty to eighty-eight per cent. of the power of the water.

Class No. 2.—Those rendering from seventy-five to eighty per cent.

Class No. 3.—Those rendering from seventy to seventy-five per cent.; and

Class No. 4.—Those rendering less than seventy per cent.

93. MILES GREENWOOD, *Cincinnati, O.* Leffel's American Double Turbine Water-Wheel. This is a cast-iron wheel, having

wrought plates cast in for buckets, and is, in effect, two wheels riveted together, the upper having 12 buckets, discharging towards the centre, and the lower having the same number of buckets, inclined in a curve, being closed on the side towards the centre, and discharging at the bottom. In the place of the ordinary cylindrical gates between the guides and the buckets, this wheel is provided with twelve curved guides, movable about a vertical axis near the middle of their length. The outer part of each guide being drawn towards the axis of the wheel, the inner part, moving outward, approaches the outer part of the next guide and decreases the width of the opening, and finally closes it. Closing the gate in this way, and at the same time closing the passages between the guides, keeps the form and direction of the water approaching the buckets more nearly tangential, and enables it to impinge upon a greater depth of the bucket than with a gate opening by rising upward from near the bottom of the buckets. This, the judges regard as an improvement, in applying the water with the gate partially open, but with the wheel fully open. The judges are of opinion that in the wheel exhibited, the direction of the water is not sufficiently near to the tangent at the point of application, and is too abundant to enable the wheel to render so good an effect as it otherwise would. The arrangement of the gates is novel, and the whole machine is regarded by the judges as of the better class of the less expensive wheels.

They would place it in Class No. 2 above described, and for improvements in construction, which fill a public demand, better than was filled before its introduction, award a *Silver Medal.*

563. AMERICAN WATER-WHEEL Co., *Boston.* Two Turbine Water-Wheels. One is a model of Warren's Improved Turbine Water-Wheel, with Globe Coupling, for which premiums have been awarded at previous Exhibitions. The other is the same wheel in an improved curb, which is to be commended for its simplicity, for the improved form in which it leads the water to the wheel, and for the ready accessibility to the wheel which it insures.

It will increase the efficiency of this wheel, and in the opinion of the judges raise it to a high position in Class No. 3, above described. *Bronze Medal.*

884. MILES GREENWOOD, *Cincinnati, O.*, by H. McMURTRIE & Co., *Boston.* One Bryson Water-Wheel. This is a simple and quite efficient centre-vent wheel, made in one casting. The gate is a cylindrical register, moving laterally between the guides. The

small number of parts renders it practicable to place this wheel in the market at a small price, and the judges regard it as belonging in Class No. 3, above described. *Bronze Medal.*

One Whitman's Water-Wheel Governor. This is a simple and cheap Ball Governor, adapted to those cases where close accuracy is not required.

433. Gillespie Governor Co., *Boston.* Hydraulic Rotary Water-Wheel Governor. This is an ingenious and well-made machine for regulating the speed of water-wheels. It is quick in its action, and when properly adjusted, appears to the Committee a very sensitive and reliable regulator, capable of being adapted to any desirable degree of steadiness of speed, and not liable in its quickness to run by the desired extent of change. The judges recommend the award of a *Silver Medal.*

946. Hunt, Waite & Flint, *Orange.* Hunt's Double-Acting Turbine Water-Wheel. This is a substantially-made centre-vent wheel, two feet in diameter, with fixed guides of wrought iron, and buckets of chilled cast-iron cast into the top and side plates. The judges have been unable to learn the particular improvements claimed by the exhibitors, but regard this wheel as equal in efficiency and durability to any of the wheels exhibited. They would place it in Class No. 2, above described. *Silver Medal.*

639. G. T. McLauthlin, *Boston.* Test Turbine Water-Wheel. A form of water-wheel in which impact and pressure are combined. It is simple in construction, and particularly adapted for small streams bearing driftwood or other floating material, which would clog or break many wheels.

It is an improved form of this class of wheels, and the judges would place it high in Class No. 4, above described. *Bronze Medal.*

54. William H. Holland, *Boston.* Model of Paddle-Wheel for Steamboats. The object of the improvement exhibited is to avoid the jar to machinery and boat by so placing the floats that they will strike the water obliquely. A saving of power is also claimed. That the former object will be attained if the floats are properly proportioned to the speed and diameter of the wheel, is clear, but that power in propulsion is also saved, is not so clear to the judges. This is a point which will best be determined by experience, which they understand is at present somewhat divided.

Diploma.

275. J. A. Woods, *Boston.* Model of Paddle Wheel. At the end of each blade or float is provided a crank, by which its position in entering and leaving the water is regulated.

207. A. C. Blethen, *Lynn.* Submerged Pump. This is the same as the ship's pump shown at the last Exhibition by the New England Pump Company, for which a Silver Medal was awarded; with an improved hanging or setting, and valves, making it more manageable, simple, durable, and more easily constructed.

Diploma.

288. Charles H. Hersey, *Boston.* Patent Rotary Pump. This Pump received a Silver Medal at the last, and a Bronze Medal at the previous Exhibition. It was then described as a "wabbling valve or diaphragm pump." For improvements in principle and proportion since made, we recommend a *Diploma.*

416. Hunt, Twitchell & Co., *Boston.* No. 2 Johnson's Patent Power Pump, and one No. 2 Rotary Pump. These two Pumps are the same in kind. One is driven by ordinary shafting, and one by an oscillating steam-engine set on the same frame. The pump consists of a drum or cylinder set horizontally, having an inlet port on its bottom side, and an outlet port set tangentially at its upper side or third quarter. In the centre of the drum is a shaft having three plates or paddles, which reach from end to end, and to the circumference of the drum. A hollow cylinder of smaller diameter, revolving in grooves in the drum-heads, and set eccentrically, so as to touch the drum just beneath the outlet port, and to enclose the main shaft, forms the abutment; the plates passing through corresponding slits, press the water between these two cylinders, from the inlet port where they diverge, upwards and over and out the outlet port, where they converge together into the same plane. A very simple pump, and, though liable to wear, like all rotary pumps, it is cheaply made, and new parts are easily supplied. It will allow substances of considerable size to pass through without obstructing it, and is very available for many places. *Bronze Medal.*

505. Henry M. Wiswall, *Boston.* Torrent Rotary Pumps. Torrent Fire Pumps. Torrent Rotary Composition Pumps. These pumps are the same as were shown at the last exhibition as Knapp's Balance Pressure Pumps, for which a Silver Medal was awarded. As nothing was added, no description is necessary beyond that in the last report.

884. H. McMurtrie & Co., *Boston.* One Centrifugal Pump. This is a centrifugal fan, which, ordinarily made to blow air, is here made to force water by running at a great speed, taking water around a centre shaft, and forcing it out of a pipe at its circumference.

699. E. H. Ashcroft, *Boston.* One Pulley Pump. A very simple and convenient arrangement of a single piston force-pump, the piston sucking and forcing, alternately, with light and loose pulley, &c., for the service of steam-boilers. *Diploma.*

855. C. H. Carter & Co., *Antrim, N. H.* People's Pump. A common family Pump, with barrel so swelled out as to admit a rocking arm to move the piston, the shaft of the arm passing through from outside, moved by a pump handle. The top of the pump is closed by an air-tight cover, so that the water that is lifted by the piston can be forced out with power for garden purposes, or in case of a fire. *Diploma.*

899. Henry N. Stone, *Boston.* Tanner's Force and Lift Pump. This belongs to a collection of Edson's Pumps, which, for the most part, were shown at the last Exhibition. The workings of this pump could not be seen altogether, and no one appearing to describe it, the Committee are unable to judge of it further.

923. A. H. Knapp, *Boston.* Cup Water-Elevator. Double Acting Force-Pump. The Cup Water-Elevator consists of an endless chain reaching to the bottom of the well, round a pulley suitably fixed, having two series of cups balancing each other. The inventor claims that when the cups pass inverted full of air into the water, the water by the escaping air is purified, so that foul wells of impure water become useful. *Diploma.*

The Double Acting Force-Pump could only be seen illustrated by a drawing. This consists, briefly, of a close-fitting, hollow piston and valve passing up and down in a cylinder of twice its area; same piston is enclosed above by a cylinder of its own area, with an outlet pipe, by which means a constant stream is obtained, an air-chamber being placed at the bottom of its whole pan.

Diploma.

579. James Harris, *Boston.* Two Water-Meters. This meter is the invention of James Harris of Boston, who has been inspector of meters for the Boston Water Works for several years, and has had charge of the repairs of the same. He has thus had a most

favorable opportunity of studying the merits and demerits of the various styles of meters in actual use in this city; and also to test the comparative qualities of a great variety of new meters which are brought to the city repair shop for tests and examinations.

In this meter he has endeavored to combine simplicity, durability and accuracy; avoiding all combinations and arrangements which experience in other meters has shown to be defective, and retaining such general features as have proved good.

This is a double cylinder meter with plunger pistons of uniform diameter throughout their whole length. These plungers are hollow, and fulfil the double duty of pistons and valves, the ports being arranged on the inner surface of the cylinder. This we deem a most admirable feature.

The arrangement of the ports in each cylinder is likewise another important feature, and we think a good one, as it widens the bridge or intervening space between the ports. The exhaust or discharge port in each cylinder is on one side of a vertical plane, cutting it longitudinally through the centre, while the two inlet ports are on the opposite side of the same plane, thus affording a wider bridge between the inlet ports, and at the same time admitting of an enlargement of all the ports.

The plungers being of uniform diameter throughout their entire length, afford a larger surface in both cylinder and plunger, over which the wear is distributed, than in any other piston meter.

The plungers are connected by a crank-shaft so that the full length of stroke of each plunger is insured, and a positive motion results therefrom, so that every stroke of the plunger always discharges the same amount of water.

The motion of the crank-shaft is communicated to the register by a pawl and ratchet arrangement which is quite novel, and obviates the defect which has been observed in many pawl and ratchet movements, whereby the pawl sometimes misses a tooth. In this case it must work every time.

The weight of metal in this meter is very considerably reduced from that required in the "Worthington" meter, and a test of the relative discharge of this meter and one of Worthington's of the same capacity, showed that, under the same conditions, this meter discharged 75 gallons in 4½ minutes, while the Worthington discharged the same quantity in 5¾ minutes.

Piston-meters have been proved, thus far, to be the best and most reliable class of meters, and we have no hesitation in saying that we consider this meter now on exhibition the best of its class, and award a *Gold Medal.*

426. UNION WATER-METER Co., *Worcester.* Three Water-Meters. These Meters are comparatively new, having been in use only about one year. They have been introduced in twelve cities, and the inventor, Mr. Ball of Worcester, claims that in all cases they have given perfect satisfaction.

The advantages claimed for this meter over others may be briefly stated, viz.:—

First. The conical valve, which has a constant rotary motion, filling and discharging both cylinders. The ports are in area a little larger than the supply-pipe, and there is always one port or its equivalent open, never any more or less; they also open and close gradually, and when one is opening the other is closing, resulting in a constant, even, unbroken flow of water in which the pistons and valves are so balanced as to relieve them from nearly all labor or wear, allowing them to float along with the flow of water, without the least noise or reaction of the water in the pipes, and with so little friction that six inches head or pressure is sufficient to move the pistons and valves.

Second. The pistons are so made (in one casting), that by simply screwing up one bolt they may be expanded to an extent that will cover all the wear they will ever be likely to receive.

Third. The cylinders are composed of three annular rings; the outer one, or shell of the meter, is of cast-iron, the inner one of rolled brass or composition, and the intermediate space is filled with hydraulic cement. It is claimed that this arrangement is both better and cheaper than the ordinary plan.

Fourth. The register is driven by geared wheels, instead of the usual pawl and ratchet movement, thus insuring a positive and steady motion.

Fifth. The meter and all its parts are constructed in the most simple and substantial manner, so that the expense is not over one-half that of the "Worthington" meter, which is in such general use.

This meter is so new, and been in operation so short a time, that the validity of the inventor's claims, as above stated, can only be judged by their apparent qualities, and not by actual experience. There are some good features in the valve arrangements, particularly in the gradual opening and closing of the ports, insuring a constant and uniform flow; but it seems to us that the conical form of valve will produce very uneven wear, and it is well known that in all meters the valves soon wear out and become leaky, and as the wear in this form must be uneven, the advantages claimed for the form can hardly be allowed.

It seems hardly credible that a piston cast in one piece with a solid rim can be expanded by a simple compression of its sides or ends, yet the screwing of a single bolt, in our presence, actually did tighten the piston in the cylinder so that it could scarcely be moved. One can easily conceive that in a thin piston, whose rim or bearing surface is not over three-fourths of an inch wide, that, if there be any inequality in the thickness of the sides or ends, when the sides are compressed or drawn together by means of a screw at the centre, the piston may be warped out of its true and normal plane, and the edges of the rim canted so as to produce the tightening effect; but if so the effect must be pernicious. If the rim of the piston were composed of several rings made in segments, the effect claimed in this case would be reasonable, but how the circumference of a solid ring can be increased by the method claimed does not appear at all clear.

The method of constructing the cylinders above described is very simple and substantial, and a great saving in weight of composition metal is effected. The use of gearing to drive the register is better than the pawl and ratchet movement.

On the whole, we consider the meter a very good one, and the fact that it can be produced at about one-half the cost of those in the most general use, should warrant a liberal encouragement of their use until they have stood the test of time. We recommend a *Silver Medal.*

952. GERARD SICKELS, *Boston.* Water-Meter and Register Annexed. The inventor of this Meter, Gerard Sickels, of Boston, has for many years been experimenting upon Water-Meters, and the one he now exhibits as the result of his experiments, researches and comparisons, is what may be called a "semi-rotary" meter. It is a cylinder, on the inside of which projects a solid abutment, and from either side of this abutment the water enters and discharges through ports opened and closed by a valve arrangement. Fitted to the projecting end of the abutment by a leather packing is a flap or wing, which is packed on its edges with leather and hinges on pivots at the top and bottom of the cylinder. As the water enters on one side of the abutment, the flap or wing is forced through an arc of a circle of about 300 degrees, when the valve on the opposite side of the abutment opens and the wing is forced back through the same arc, and so on,—the wing vibrating back and forth like a pendulum. The valve piston works vertically, with no side pressure, and the wear is consequently very slight. There is no dead point in this meter, as the valve does not move until the conditions are set by the piston or its equivalent, and then the

water acts *directly* to move the valve. All the motions are positive and not amenable to uncertainties. The meter on exhibition weighs about 15 lbs., and, it is claimed, will pass more water than meters now in use which weigh 60 lbs., and occupies less than one-quarter of the space. The cost of one of these meters of five-eighth inch capacity is about $20.

The inventor claims that he has thoroughly tested this meter in comparison with other meters, and that the durability of all the parts compare favorably.

There can be no question that this is a simply-constructed meter, the valve arrangements of which are very ingenious and very good; but it is questionable whether the leather packing of the edges of the wing will endure long, and whether, under great head or pressure, there will not be a leakage.

The inventor claims that the edges of the wing may be packed with metal; but it must be evident that, in either case, the wear upon the edges must be unequal, varying from a minimum at the hinge to a maximum at the point of contact with the cylinder, and this it seems to us is the great objection to all rotary or semi-rotary meters. We think, however, that this is the best meter of the rotary school which we have seen, and its compactness and low cost certainly entitle it to a fair competition with all, and we recommend a *Bronze Medal.*

The Register attached to this Meter deserves especial mention for its extreme simplicity and low cost compared with other registers. It is applicable to numerous other purposes besides water-meters. We commend it to favorable notice, and award a *Silver Medal.*

426. UNION WATER-METER CO., *Worcester.* Press-Drill for Drilling Water Pipes. A very good arrangement, but nothing new.

Ball's Patent Tap and Band for Cement-lined Water-Pipes. A very excellent thing, and one that insures a more perfect security in the attachment of service-pipes to main-pipes than by the common practice of soldering. *Diploma.*

Hydrant Waste-Cock. This is so arranged that the valve and spring can be easily removed for cleaning. Very good.

705. J. D. BRAMAN, *Boston.* Two Models Paul's Wooden Pavement. This Pavement is the invention of Mr. J. F. Paul, of

Boston, and is one among quite a variety offered to the public as substitutes for stone pavements, which are noisy and soon become rough and uneven, owing to the unequal settling of the separate blocks.

Wooden pavements are becoming more and more popular in all of our principal cities, and the improvements which are being made in wood-preserving processes and the styles of laying the pavement, will make this class of pavements the principal pavement for city streets. Its cleanliness, smoothness and noiselessness, combined with the immense saving which it must effect in the wear and tear of vehicles, go far to counterbalance the difference, if any, in durability and expense of first cost.

In this pavement, the close board flooring required as a foundation in other pavements, is dispensed with, and only longitudinal board stringers are used, which are placed from three to four feet apart and so bedded in gravel that their top surfaces form the arched crown of the roadway. The blocks, which are grooved on their sides, are then fitted to a substantial tongue, which extends entirely across the street from curbstone to curbstone, forming an arched rib whose abutments are the curbstones, each tongue or rib supporting two contiguous sets of blocks. By this device it will be seen that the arched rib or tongue connects all the blocks together, so that the load upon any one block is transferred to all the surrounding ones, and there can be no inequality of settling.

In our judgment this pavement is the simplest, least expensive and best wooden pavement yet presented to the public.

23. Spaulding & Coffin, *Boston*. No. 5 Union Power Capstan. No. A Union Power Capstan. Its main parts are a head, drum or barrel, and the deck-plate. The head carries a pinion, the drum three upright shafts, but which spread outwardly, on its inside, as they go downwards. The deck-plate supports the drum and head by an upright center shaft, and has a stationary circular rack.

When this capstan is used as a simple capstan, the circular rack is detached from the deck-plate by a foot-lever, and the head is as readily locked to the barrel, and all moves together as one piece, the shaft and gearing remaining motionless. When used as a power capstan, the circular rack is locked to the deck-plate and head unlocked from the barrel, the head and its pinion, moving rapidly, revolve the shafts, and in turn, their lower pinions taking into the stationary rack, cause the drum to move slowly around.

The advantages claimed, are, the capstan can move in either direction, as convenience requires, and in case the line overrides, that it may never be necessary to cut it. The inside shafts spreading, and circular rack bounding them on the outside, the fulcrum and leverage of the cogs at this point are outside of the circle on which the line is wound, much to their advantage in strength and durability; the slight twisting of the upright shafts allows all the gearing to come to a bearing. In construction, the slightly conical shape of all the gears is greatly in favor of smooth and regular teeth, increasing their durability and the strength of the whole.

Silver Medal.

SUB-COMMITTEE, No. 8.

PAPER MACHINERY, COTTON AND WOOL MACHINERY, BRICK MACHINES, SCALES, &c.

J. C. HOADLEY, CALEB C. ALLEN,
JAMES R. ROBINSON.

174. GEORGE KEEBLE, *Dracut.* Patent Combination Spiral Spring for Paper Stop-Cutter. This device consists of a stand, to be secured to the floor by wood screws, giving support to a spiral spring, which is adjusted to a suitable degree of tension by means of a connecting strap fitted with a buckle. A simple, compact and apparently useful arrangement, commended to the favorable notice of paper manufacturers and builders of paper machinery.

Diploma.

302. J. S. PARSONS, *Boston.* Nickel-Plated Paper Pulp Screen This is a fine screen-plate, of the usual and approved form, made, doubtless, of sheet brass in the usual manner, and plated, probably by the electro-plate process, with nickel. The plate is well made, and without the plating would be a good screen-plate and nothing more; but it is probable that the nickel plating will add considerably to the durability and consequently to the value of the plate. Paper manufacturers are respectfully solicited to give it a trial.

Diploma.

400. UNITED NICKEL CO., *Boston.* Nickel-Plated Paper Pulp Screen. This is a screen-plate altogether like the one described under No. 302, equally well made, but a little coarser cut. See remarks under that number. *Diploma.*

162. GEORGE DRAPER & SON, *Hopedale.* Temples for Looms. This well-known firm here present some samples of their excellent

rolling temples, adapted to various fabrics. They need no commendation from us, as they are favorably known to all the manufacturers in New England. *Diploma.*

255. L. S. Watson & Co., *Leicester.* Cotton and Wool Hand Cards. A well-made, honest article, obviously taken from lots prepared for the general market, without selection or extra finish. There are stripping cards, for manufacturers' use, and all varieties of hand cards. These articles, nearly or quite obsolete in New England, are still much used at the South. *Diploma.*

301. William T. Carroll, *Medway.* Spinning Rings for Cotton Spinning. Mr. Carroll here presents rings for ring spinning, of the ordinary form, and also his patent adjustable rings. All are made with great accuracy and excellent finish, and the running samples broken asunder show the iron to be good, and the case-hardening to be excellent. Nothing can be finer in its way than the deep, perfect conversion of the surface into steel, hard, bright and close-grained, around a core of tough, fibrous iron. *Bronze Medal.*

309. Burgess Cop Tube Co., *Providence, R. I.* Patent Machine Paper Cop Tubes. These tubes, intended to take the place of the tin tubes formerly used to give support to the bar of the cop, in mule-spinning, are beautifully adapted to the purpose for which they are designed, and afford a fine example of the great importance of little things in the details of delicate manufactures. The trouble found to be inseparable from the use of tin tubes led to attempts to make paper tubes, by hand processes, to take their place. But no great success was reached. The tubes contracted unequally in drying, and while some were of the right size, and went to the proper place on the spindle, some were too loose, and dropped down too far, and some were too tight, and could only be forced with difficulty, if at all, down far enough. The ends were not always smooth, and their roughnesses caught the yarn, and made a good deal of "cop waste." The paper was softened and the cement dissolved by the steaming process, to which the cops are submitted, in fine yarns, before winding. In all these respects, the machine-made tubes of the Burgess Cop Tube Company are greatly improved, if not absolutely faultless, and a real advantage to the cotton spinner. On this point our judgment is confirmed by that of some of the ablest manufacturers in the country. Mr. William C. Chapin, agent of the Pacific Mills, Lawrence, says:

"We have used these tubes, and prefer them to any we have ever met with. We held on to tin till the last moment, for we could not secure a satisfactory manufacture from paper. Mr. Burgess's invention has relieved this, and has really secured a great boon to manufacturers." For this meritorious invention and useful article of manufacture, we award a *Gold Medal.*

442. INMAN MANUFACTURING Co., *Warren, R. I.* Six Shoe String Braiders. One Silk Braider. In this ingenious and useful machine, the travellers are carried through their mazy, epicycloidal dance by means of revolving, horizontal wheels, which in turn engage and disengage with the travellers in a manner at once absolutely positive, yet perfectly free, and mechanically far superior to the old method of guidance in a curved groove. The tension arrangement seems to operate perfectly, the stop-motion is simple, prompt and infallible, and the result is that the machines run admirably at a high speed, considerably higher, it is believed, than the braiders in general use. The smaller machines, with nine to seventeen travellers, designed for shoe strings and similar work, are very conveniently arranged on a wooden frame, having a reel stand common to ten rows of braiders, arranged in pairs,—a compact and convenient arrangement; the reels are a model of adaptation to a specific purpose. There will be, we think, a considerable economy of power in running these braiding machines, over the ordinary form. They are admirably adapted to covering rubber cord, for elastic goods, for covering hoop-skirt springs, and for all similar purposes. We recommend it to the favorable notice of all persons interested in the manufacture of braid and braided goods, and award a *Silver Medal.*

835. DANIELS BROTHERS, *Foxborough.* Felt Stamping Machine. This is a light, cheap, convenient press for shaping felt hats, and perhaps useful for other similar purposes. It is worked by the foot, works easily, has power enough for the purpose, and appears worthy of adoption. *Bronze Medal.*

876. THOMAS W. CURRIER, *Boston.* One Loom Cam. This is a pair of treadle cams for a loom, having the part forming the throw secured to the hub by means of screws; rendering the part subject to wear detachable for repairs. A good mechanical suggestion, and perhaps worthy of adoption in many cases. *Diploma.*

901. A. J. Rabbeth, *Pawtucket, R. I.* Patent Self-Oiling Spindle. The lower half of this spindle is slightly tapered and fitted into a deep cup, which holds oil, so that the spindle runs in a long, continuous bearing, out of which the oil can get only by evaporation at the top. In the absence of all information as to the extent to which it has been tried, we can only bespeak for it careful and appreciative notice.

947. James E. Crowell, *Chelsea.* Spinning Frame. Under the above unassuming and undiscriminating title we have, if we mistake not, a very important and meritorious invention, which will constitute a real step in the improvement of textile machinery. It is no less than a continuous spinning machine for spinning wool. Instead of the intermitted, alternative and complex motions of the wool spinning jack, this machine produces by continuous and simple motions, from ordinary roving, woollen yarn of great beauty, and with such ease and certainty, that we cannot doubt its superior economy. The leading invention consists in applying a set of draft rolls to the top of the flyer of a spinning frame. The frame is of the "Live Spindle" variety, the spindles being driven by bands from one drum, and the flies from another. These drums are geared together, and upon their relative speed depends the "draft" of the roving in spinning.

This machine is new, and perhaps yet in the experimental stage; yet its speedy success seems assured, and in view of its ingenuity and importance, we award it a *Gold Medal.*

962. Peter Lawson, *Lowell.* Improved Composition Drawing or Roving Can. This can is made of leather pasteboard, or the sort of stiff fabric resembling paper, made of scraps of leather ground up and formed into sheets on a paper machine. The can is light and strong, and looks as if it would be durable and excellent. A guard of tin or galvanized iron a few inches in height, at the bottom, may be desirable, to protect it from injury by the feet of the operative; and is easily and cheaply applied.

Bronze Medal.

973. George L. Richardson, *Brunswick, Me.* Picker Cushion for Loom. The essence of this device is the application of an oval ring, or hoop of malleable iron, with several prongs, to the purpose of riveting together, and in a measure hooping, several thickness of fine belt-leather, to form a picker cushion; the part which strikes the end of the shuttle being so strengthened as to be rendered much more durable. Recommended to favorable notice.

Bronze Medal.

732. **Chas. Heath**, *Malden.* Brick Press. This is a lever Press, operated by hand, for re-pressing bricks, as they are put in by one attendant and removed by another, used in the manufacture of pressed brick. It is in general use, and has been in sole possession of the field for five or six years, giving good satisfaction, as is proved by sixteen certificates from brick manufacturers, which were submitted to the Committee, and carefully read. Its merits are therefore well and widely known, and its defects also, if it has defects, as the Committee think. We award a *Diploma.*

89. **Geo. A. Metcalf**, *Malden.* Patent Brick-Pressing Machine. This is a new press, which has been in use but one season, for pressing brick in making face-brick. It does the same work as the press exhibited by Mr. Heath, No. 732, and appears to the Committee to have some points of superiority. The frame is of cast-iron, and better resists the strain of the pressing apparatus than wood can do. The power at the final pressure is very great, and coming about to a "dead centre," is easily maintained for a moment, to give time for the brick to "set," without the necessity of a second blow. The frame is partly lifted,—tilted,—by the downward motion of the bar, and serves as a counterpoise to raise the bar and release the brick, without muscular effort. Without the prestige of several years' successful operation, we yet cannot but think it an improvement, real, if not very marked, upon the presses hitherto used; and we are confirmed in this opinion by the testimony of brick manufacturers. For this press, we award a *Bronze Medal.*

685. **W. Z. Wheeler**, *Boston.* Prof. Adams' Steam Brick Kiln. This is an ingenious attempt to improve the process of burning brick, by introducing jets of steam to guide and direct the flame and gases from a series of coal fires, burning in permanent furnaces, arranged on two sides of the Kiln, through the body of bricks to be burned, which are arranged between the furnaces, and closely covered at the top with clay and sand. The Committee visited the extensive brick-yards of the Massachusetts Brick Co., at Medford, where the only kiln of this kind, save one, yet erected in this vicinity, has been used to burn a single kiln of brick. As might have been expected, this first trial with unfamiliar clay, was not entirely successful; yet the bricks, though light-colored, were well enough burned to be useful, and very even. It is to be hoped and expected that this meritorious effort may soon be rewarded with full success, when it should, of course, be honored with the highest award. In its present state we bespeak for it careful consideration, and award a *Diploma.*

70. A. A. Frazar & Co., *Boston.* Sampson's Ten-Ton Platform Combination Standard Scale.

Dormant Warehouse Scale, two pillars, Sampson's patent, 3,500 lbs. capacity.

Portable Warehouse Scale, Sampson's patent, 1,600 lbs. capacity.

The Platform Scale here exhibited, is extremely well made, and while the weighing apparatus may be of the usual average quality, the scale-beam, counterpoises and weights, are elegantly finished and electro-plated, for exhibition. The combination of bell-crank bars with tension rods in this scale, is admirable, and gives facilities heretofore unknown for extending railway track scales to any length that can be desired, with the certainty of accurate weight on any part of the platform. The arrangement for relieving the knife-bearing edges of all wear arising from the lateral and longitudinal motions of the platform, are perfect. We regard this large scale, particularly for railway use, as a decided and important improvement upon all scales hitherto in use. It behaved well under all the tests applied to it, and showed great sensitiveness and accuracy. The smaller scales are less noticeable, either for novelty or merit. We award for the large scale, as a new invention, a

Gold Medal.

917. T. R. Fairbanks & Co., *Boston.* Howe's Patent Standard Scales.

Four-Ton Hay Scale, with pillars and caps.

No. 3 Dormant Scale, 3,500 lbs., for Rolling Mill.

Patent Drop-Beam Scale, 900 lbs.

Portable Scales.

Patent Even Balances.

Post-Office Scales.

The Four-Ton Hay Scale, taken from the usual stock, without extra finish of any kind, showed under the severe tests applied to it, very great sensitiveness and accuracy. Loaded with 1,990 lbs. permanent weight on the platform, and 1,000 lbs. shifted in succession to the centre and four corners of the platform, it gave an extreme variation of only 9 oz., when perfectly balanced, and turned positively with half an ounce on the platform. With a movable weight of only 50 lbs., there was absolutely no variation, save 2 oz. at one corner, which was known to be slightly out of adjustment. We must candidly express our opinion, even in the face of this remarkable performance, that the plan of construction of this scale cannot admit of such extension as the Sampson Scale; but for all the practical purposes of hay scales, and all general purposes up to ten tons capacity, the scale here exhibited demonstrates that they may be relied on for both accuracy and delicacy.

Of the Dormant Scales, and the other Scales exhibited, too much cannot be said in their praise. The Dormant Scale, with 200 lbs. on the platform, turned freely and positively with one bank sheet, weighing one-tenth of an ounce. The Drop-Beam Scale has a valuable patented improvement by means of which supports are raised up and firmly held under the platform, to hold it steady while loading and unloading, thus relieving the knife-bearing edges of much wear. The application of balls, resting in shallow concave plates, to give freedom to the platform and dispense with check rods, is admirable. The Even Balances have a novel and useful contrivance for keeping the bearing edges covered from dust and dirt, affording incidentally a convenient stand for the weights. The Post-Office Scales are good and novel. The Howe Scales having received a Gold Medal at the Ninth, and a Silver Medal at the Tenth Exhibition, we now award for improvements a

Silver Medal.

163. PAGE BROTHERS, *Franklin, N. H.* Sides of Lacing. Rolls of Belting. The articles here shown, comprising leather belting, 2 in., 2½ in., 3 in., 4 in., 5 in., and 8 in., and several sides of lace leather, are said to have taken a Silver Medal at the New England Fair, in 1869. They look like well-made, honest articles, a little shop-worn and dingy, creditable, if not specially meritorious. It is noticed that the edges of the belts are slightly rounded, which may be an improvement, but is probably of little importance. We see no reason to doubt that these are fair samples of the usual production of the exhibitors. *Bronze Medal.*

226. A. M. STEWART, *Franklin, N. H.* Two sides Lace Leather. Cut Belt Lacing. These are good, strong, pliable lacings, as good, apparently, as can be made. *Bronze Medal.*

416. HUNT, TWITCHELL, & Co., *Boston.* Two Trimmed, Oak-Tanned Belts. Roll of Cotton Belting. Four rolls Oak-Tanned Leather Belting. This is an excellent exhibit, second to but one of the kind in the fair. The double, 20-inch, oak-tanned belt looks as good as can be made from the materials furnished by Nature. The other leather belts—5 in., 6 in., and 8 in.,—are also excellent. The Cotton Belting is a marvel of firmness, evenness and strength. It may prove economical,—perhaps has proved so; but we still think "there is nothing like leather." *Silver Medal.*

733. Edward Page, *Lawrence.* Leather Belting. Sample of Cotton and Woollen Rolls. This exhibit must be conceded by all competent judges to be the finest of its kind in the Exhibition, and very hard to surpass. The huge 28 in. double belt, ninety feet long, requiring thirty ox hides for its construction, is the largest and handsomest leather belt we have ever seen. The samples of smaller belts of various styles, cemented, sewed, laced, pegged and riveted, single and double, are excellent. The covered top rolls for drawing and spinning frames for both cotton and wool, are very noticeable. A sample of old belting cut from a belt which has been in use sixteen years, will attract attention and repay examination. It is an end, with the lacing holes and marks of the lacing in it. It is known to the Committee that these articles, handsome as they are, are all such as are made by the exhibitor in the regular course of his business. *Gold Medal.*

823. Josiah Gates & Sons, *Lowell.* One twenty-four inch Double Belt. Four samples Leather Belting. One dozen Lace Leather. This is a very creditable exhibit, evidently taken from ordinary stock, without special effort for exhibition. The lace leather, especially, is excellent, and all the articles give assurance that those who look to these parties for their supplies of such articles, will get their money's worth. *Bronze Medal.*

84. Duncan Morrison, *Portland, Me.* Coal Sifter. Walking Cane. New Method of propelling Machines. Scaffolding. Car Detector. Cheese Cutter. Rock Drill. Rat Trap. Dinner Plate. Paper Cutter. Adjustable Level and Plumb Rule. Pendulum Motion for propelling Machinery. The teeming brain and busy fingers of this canny Scot have fairly overwhelmed us with devices almost as numerous, heterogeneous and diverse as those enumerated by the Marquis of Worcester, in his "Century of Inventions." We cannot give space to anything like a description of all the articles, and only refer briefly to the more useful.

The Coal Sifter is well enough to use in the room where the fire is, shutting up closely, but is devoid of any important novelty.

New Method of Propelling Machinery, by means of weights to be wound up by hand, and coming into use, one after another, designed to propel sewing machines. May answer very well, but we should think a simpler machine far better.

Scaffolding. A folding scaffold, or staging, for the use of stucco-workmen, painters, decorators, &c., &c., with elevating apparatus. It looks rather complicated, yet attractive, and may prove useful.

Rock Drill. Too complex and weak.

Dinner Plate. A wooden model of a plate with two depressions in the rim, quite near together, the one designed for salt, the other for mustard. Not likely to be adopted.

Paper Cutter. A cheap, useful machine for trimming the edges of paper hangings.

Adjustable Level and Plumb Rule. Not very unlike others in the market.

Pendulum Machine for propelling machinery. As the oscillating motion of the pendulum has to be converted into rotatory motion, through much complexity, it is not perceived why a balance-wheel would not be far better.

For Scaffold, and Paper Cutter, we award a *Diploma.*

130. J. J. WALWORTH & Co., *Boston.* Power Hydraulic Clothes-Washing Machine; Hand Hydraulic Clothes-Washing Machine. In this Machine the clothes to be washed are placed in a wooden cylinder perforated with holes about half an inch in diameter and about two inches apart, and lined with a sort of grillage of wooden rods about one inch in diameter, arranged hexagonally, parallel to the axis of the cylinder, and about two inches apart. The clothes rest on these rods, and are thus kept at a little distance from the perforated cylinder to admit of free circulation of water or soapsuds. When at work, the power machine is revolved just one revolution in one direction, and then the same distance in the opposite direction, and so on, with a continuous oscillatory motion. The cleansing is done by the currents of water, alternately, from side to side, and also apparently from within outward, by centrifugal force, and again, from without inwards, at the periods of rest. The clothes are kept very open and permeable by the washing fluid by the falling motion from side to side at the alternations of motion. There is no rubbing, friction, tension, or other injurious action to wear out the clothes; yet the cleansing is done rapidly and effectually.

Doubtless the edges of wristbands and collars, and other parts more soiled than the general surface of the garments, will require an extra application of soap, and either a little rubbing by hand, or a few extra turns of the machine; but this is not only common to all existing washing machines, but inevitable in all attempts to cleanse clothes by machinery.

These machines seem to be a happy adaptation of the dash-wheel to domestic use, and well worthy of general adoption.

Silver Medal.

279. D. M. Weston, *Boston.* Centrifugal Machine. This is a beautiful modification of the useful machine sometimes called a hydro-extractor, for drying cloths, yarns, &c., &c., and also for drying sugars, by centrifugal force. It is also used in the preparation of artificial guano, from fish, and for many other purposes. In the machine here exhibited, the revolving spindle, carrying at its lower end the basket, is so suspended from the top as to admit of entire freedom of oscillation, so as to work admirably, even when loaded excessively on one side. It has a convenient and efficient friction brake, to check the rapid motion of the spindle when it is desired to stop it, and is in all respects an excellent machine of its class. We award a *Silver Medal.*

311. Swain, Fuller & Co., *Lynn.* American Beating-Out Machine. This light, powerful, inexpensive and commodious machine, consisting of a suitable frame and table and a powerful toggle-joint press, worked either wholly by the foot, or in part by the foot and in part by a belt brought into action by the foot motion, performs admirably and rapidly the work of the shoemaker, known technically as "Beating-Out"—*i. e.*, shaping the sole, after sewing, to the last, and giving it the form it is to have when done. This is done with such expedition that ten cases, of sixty pairs each, or six hundred pairs can be done in one day of ten hours, or one pair per minute, including closing down the channel.

The work is also better done than it can be done by hand, as there are no hammer marks or indentations to be buffed out, so that the sole is finished in less time and with less loss of weight than soles beaten out by hand can be.

This appears to be one of the best of the many excellent machines which have been added within a few years to the resources of the shoe manufacturer, and is already highly appreciated.

Silver Medal.

704. Belt and Leather Stuffing Co., *Boston.* Noyes' Patent Combination Oil-Saving Can. Noyes' Patent Combination Oil-Saving Tank. These are excellent contrivances for dealing out and measuring oil, either for sale at retail, or for consumption in factories, mills and machine shops; combining pump, measure, faucet, strainer and dripper, with the can, and requiring the oil to be pumped up to the top of the can for measurement, so that there need be no waste; indeed, it would seem there can be none.

Silver Medal.

941. S. H. Wilder, *Deep River, Ct.* Fire Extinguisher. Unlike the articles hitherto introduced to public notice under the above name, this is an arrangement of machinery intended to enable the watchman or other person on discovery of a fire in any part of a factory or other building, to start the water-wheel and the force-pump immediately, without the necessity of running to the wheel-house.

The apparatus looks rather complicated, as if it would require some "gumption" to remember how to use it, even if it were always in order. Perhaps, however, this intricacy is more apparent than real. It is said to have been introduced into the Agawam Canal Company's mill, at West Springfield, where it was discontinued for want of sufficient strength in a clutch; and into a mill in New York, where it is still in operation. In the absence of further experience of its practical utility, we can only solicit for it the attention of manufacturers, and award a *Diploma.*

Sub-Committee, No. 9.

GENERAL AND MISCELLANEOUS MACHINERY.

C. E. Rymes, Henry Endicott,
John Kennedy.

372. Sibley & Wade, *Auburndale.* Model of Apparatus for Receiving and Delivering Mail-Bags. The object of this apparatus is to deliver and receive mail-bags, express packages, &c., on a train of cars going at full speed.

It consists of a scoop fitted to an opening in the side of a car, and pivoted vertically through its centre so as to swing. When designed to operate, the scoop is set on an angle in the opening, the bag to be delivered being hung on that side of the opening where the scoop inclines inward, and the bag to be received is hung on a crane at the station, and when struck by the scoop is thrown to the opposite side, causing it to close, and at the same time to throw the bag to be delivered, from its hook to the station. The apparatus has been tested on the Boston and Albany Railroad, and the inventor says that it proved a perfect success. It looks practicable, and no doubt in time may come into general use. *Bronze Medal.*

840. Northampton Emery Wheel Co., *Leeds.* Emery Wheels, Oil Stones, &c. Grinding Machines. The Emery Wheels were composed of emery and a peculiar cement, and can be made of

different consistency for different kinds of work. The exhibitors claim for them strength, durability, keeping a fine sharp corner, freedom from disagreeable smell, excellent cutting qualities, and little liability to glaze or heat. The Wheels were in operation, and from their performance, and the testimonials given to the company, we consider them an improvement, and recommend for the Wheels and Oil Stones a *Silver Medal.*

The Grinding Machines, one for sharpening circular saws, and one for general grinding, were well adapted for the purpose, durable, and well finished.

875. NEW YORK BELTING AND PACKING CO., *New York*, by E. STONE GOODWIN, Agent, *Boston.* Solid Emery Vulcanite Wheels. This Wheel is well known to mechanics, and received a Diploma at the Tenth Exhibition. Some improvements have been made since, for which we award a *Diploma.*

462. JAMES W. WILSON & CO., *Boston.* Three Patent Hangers with Rice's Self-Oiling Boxes. The Boxes of these Hangers have a hollow chamber at the bottom to receive the oil, which is taken up by a wick lying in a groove in the box proper, thus giving the shaft a continuous supply of oil, the surplus of which is again returned to the chamber. This is a good article, by which ordinary shafting may be run for months without attention.

Bronze Medal.

865. ENOCH OSGOOD, *Boston.* Shafting Hanger, Derrick, Cotton Gin. These articles were all models. The Hanger has a box balanced to accommodate itself to the shaft, and has a device by which an alarm is given when the box requires lubricating.

The Derrick has a travelling carriage on the boom, which is balanced, and the drum frame travels up and down on the uprights, by which motion the inventor claims it will raise a given weight at double the speed with the same power, as that given by the ordinary stationary drum derrick. This feature the Committee failed to see.

The Cotton Gin, which was awarded a Silver Medal at the Tenth Exhibition, has since received some improvements, for which we award a *Diploma.*

391. T. W. PORTER, *Boston.* Two Shafting Couplings. These are Sleeve Couplings made in halves and parting in line with their bore. A spline is inserted in one-half, fitting into a slot in the shaft, and the two parts are secured by four bolts, the heads and nuts of which are sunk into recesses flush with the outside of coupling.

Diploma.

768. Melville Clemens, *Boston.* Universal Shaft Coupling. The article exhibited was a working model, showing two lengths of shafting running at right angles to each other and connected by the coupling. Your Committee gave this article a very thorough examination, and feel satisfied that it has all the advantages the inventor claims for it. The coupling enables any desired angle of divergence of the shaft from a straight line to a right angle or more, and is not subject to the lateral motion of the common universal joint. A very meritorious invention, and worthy a *Silver Medal.*

942. B. Roach, *Charlestown.* Model of Shafting Coupling. The novelty consists of an intermediate disk with ribs across its centre, fitted between the two parts of a flange coupling, the faces of which are grooved to receive the ribs,—thus taking the strain from the bolts. A good article for a propeller shaft.

806. Greenleaf Wilson, *Lowell.* Wilson's Patent Belt Hooks. An ingenious contrivance for attaching the two ends of a belt. It is strong, does not cut away the leather, and can be applied very quickly. *Bronze Medal.*

988. Clement and Hawkes Manufacturing Co., *Northampton.* Belt Stretcher. A good article, easily and quickly handled. *Diploma.*

769. J. C. Chapman, *Cambridge.* Babbitt Seated Gate for Steam, Water or Gas. The body of this Gate is of cast-iron, and the gate or valve is made cylindrical and slightly conical, its motion being given by a screw-stem and wheel. The body is chambered around the outlet and inlet holes, so as to receive soft metal, which is cast around the gate after being turned and set in position. This is a very substantial way of making a gate, and has the merit of reducing the cost of manufacture, as well as insuring perfect work. *Bronze Medal.*

918. W. W. S. Orbeton, *Haverhill.* Two Cards Orbeton's Internal Screw Brace. These are designed to secure and brace the corners of ordinary house blinds. A good article. *Diploma.*

339. Abel T. Atherton, *Lowell.* Working Model of Patent Tuyere and Cistern. This is a Forge Tuyere with a water tank, the Tuyere being made with a hollow chamber into which the water from the tank circulates to keep it cool. An article well known to blacksmiths generally. *Diploma.*

507. Lyman Kinsley & Co., *Cambridgeport.* Model of Blacksmith's Swage Block. This is a revolving Block or Sow, eight-sided, each side presenting different sizes and shapes of dies for forging bolt-heads and other shapes required. It is neatly hung on a wooden frame, easily handled, and a great convenience to the blacksmith. *Diploma.*

772. Sanderson Brothers & Co., *Boston.* Bowden's Patent Portable Forge. A square, Portable Forge, made strong and durable, and well adapted for the purpose.

552. George H. Bradford, *Boston.* Mason's Patent Lever Punch. A very good article for light work. *Diploma.*

936. Charles L. Spencer, *Providence, R. I.* Model of a New Method of obtaining Rotary Motion. A device by which both the up and down stroke of a treadle in foot motion is made effectual. Evidently designed for sewing machines or other light work.

Under this number, is also exhibited an improved, patented Friction Drill. A good article, having no lost motion. *Diploma.*

841. A. B. Prouty, *Worcester.* Card-Setting Machine. This machine embraces some new movements, among which are, the change motion for widening the card, which is accomplished by simply moving a pin; the oscillation of the setter, which removes the liability of the fingers colliding with the pricker; and the stop motion. It is simplified very much, reducing the parts to about one-half the number in the old style machine, thereby allowing more rapid work. The parts are easily accessible for repairs, and well finished. The machine was not in operation, and from this fact cannot receive so decided an opinion of its merits as your Committee believe it entitled to. For the improvements, we award a *Silver Medal.*

289. Hawes & Hersey, *South Boston.* Patent Glass Press. The peculiarities in this Press consist of an ingenious combination, whereby the operator can more easily determine the amount of pressure he puts upon the material,—a very important feature in pressing glass, as an over-pressure spoils the ware. Also, in giving a very rapid movement while filling the mould, and a slower and more powerful one while the ware is receiving its final finish in the mould. It is adjustable to any dimensions, is as free as possible

from friction and side thrust, and is a very important improvement for the manufacture of glass ware. The machine is well constructed and durable. *Silver Medal.*

801. James M. Albertson, *New London, Ct.* Segment Screw Cotton and Hay Press. The principal feature in this Press is the substitution of a section or segment of a cast-iron screw of large diameter for the ordinary screw. The inventor claims that by his method a greater pitch of thread is obtained, with no more friction. The press exhibited was strong and well made. *Diploma.*

581. Carver & Manson, *Boston.* American Cigar Machine. This is a machine by which fine-cut tobacco is filled into paper wrappers prepared for the purpose, making a large cigarette, to be smoked in a mouth-piece. By this invention the cost of cigars is lessened to the consumer, and the government revenue increased, as each party using it becomes a manufacturer, and of course pays his tax. *Diploma.*

970. Elijah Holmes, *Lynn.* Tobacco Machine for making Fine-Cut. Tobacco Cutter or Shave. Vegetable Slicer. The Tobacco Machine is composed of a rotating disk with three cutters. The disk is mounted by its shaft to a wooden frame, and operated by a crank. The Tobacco Shave is an article for cutting or shaving plug tobacco for smoking. The Vegetable Slicer is similar in construction to the Tobacco Machine, with its knives adjustable, and is an excellent machine for the purpose. *Bronze Medal.*

796. Albert Betteley, *Boston.* Patent Cylindroid Pavement. Patent Rhomboid Pavement. The Cylindroid Pavement exhibited is made up of round wooden blocks, about six inches in diameter, and seven or eight inches deep, with their ends cut on an angle of about forty-five degrees, a groove being cut in each block to interlock the round surface of its neighbor. When laid, the angular surface of the top of the block is level with the street, and the spaces between the blocks are filled in to their base with tar and gravel. This pavement is novel, and when laid must make a very firm job. *Diploma.*

The Rhomboid Pavement is composed of six-inch square wooden blocks, cut at their ends on an angle to describe the form its name indicates. The upper acute corner of the blocks is cut off to make a channel for foothold. They are fastened together at each corner by iron plates, which are fitted into grooves made to receive them, about half way down the blocks. The peculiar form of this pavement tends to make it substantial and durable, as well as cheap in construction. *Bronze Medal.*

844. VANCAMP & HODGMAN, *Weymouth.* Specimens of Concrete Pavement. Oblong wooden blocks set about three-quarters of an inch apart, and grooved about half way down, the space and grooves being filled in with concrete to secure the blocks together. The exhibitor also shows a cast-iron rail bedded in concrete, evidently intended to represent a method by which the horse railway can be best laid in the pavement. *Diploma.*

305. WHITAKER SOAP FRAME MANUFACTURING CO., *Boston Highlands.* Patent Wrought Iron Soap Frame. One Iron Door. Model of Soap Crutching Machine. The Soap Frame was on exhibition at the Fair of 1865, and received a Bronze Medal. The Iron Door comprises the same improvement for stiffening light material as the Soap Frame. The Soap Crutching Machine consists of a jacket steam-kettle, with a revolving stirrer, intended to crutch the soap before it enters the frame. This we consider an improvement. *Diploma.*

920. JAMES EMERSON, *Lowell.* Dynamometer for Measuring Power. This apparatus was in operation on the main line of shafting, and consisted of a loose pulley, the driver of the belt, with two lugs or ears cast on the interior of its rim, attached to which were connections leading to a series of levers, which were attached to a spider fitted tight to the shaft, this spider acting as a frame-work to support the levers. The action of the levers is communicated to a grooved sleeve on the shaft, which in turn gives it to another lever, which works a pendulum with a pointer indicating upon a fixed quadrant the power required to run the shaft. This machine is made on the principle of the platform scale, and, if properly adjusted, must be as perfect as the scales or steelyards. It is also proved, as a scale is proved, by weights. A reliable apparatus of this kind has long been needed by the mechanic, and for this we award a *Silver Medal.*

558. J. THOMPSON CREE, *Worcester.* Model Stone-Dressing Machine.

Dressing Material.

786. JOSEPH W. FOWLE, *Boston.* Model of "Hoosac Tunnel" Drill. Your Committee did not find this model to be precisely like

the drill used at the Hoosac Tunnel, although combining many of the features of that drill. Mr. Fowle has had large experience in rock drills, and has contributed largely to their present perfection, by his inventive genius. The model exhibited is an excellent piece of workmanship, which, together with many important combinations, entitles the contributor to a *Bronze Medal.*

989. Burleigh Rock Drill Co., *Fitchburg.* Burleigh Rock Drills.

Burleigh Patent Air-Compressor.

For many years efforts have been made to produce a drill, which could be worked rapidly by power, in large operations, in mining, tunneling, &c. On account of the nature of the work, the excessive jar to which the machine is subjected, and the consequent wear and tear, these machines have generally proved failures. The enormous amount of rock-drilling to be done to accomplish the completion of the Hoosac Tunnel, has set several ingenious mechanics at work to make a drill, which would have all the qualifications necessary to meet the obstacles which have heretofore interfered with the success of others. The Burleigh Rock Drill is a combination of the inventions of these parties; but its principal improvements are of Mr. Burleigh's own invention. The machine can be worked either by steam or compressed air, the one on exhibition being worked by air. They are light, strong, readily adjusted to different angles of direction, and easily repaired. The small one in operation had a hand feed, but all above that size have an automatic feed which accommodates itself to the inequalities of consistency in the material to be drilled, as also an automatic motion for rotating the drill to bring it to a new cutting surface at each stroke. The effect of the blow is brought upon the piston bar only, thus taking the jar from the more delicate parts of the machine. The drills will do the work of from ten to thirty men. They are in use at the Hoosac Tunnel, having done all the drilling for about one mile of tunnel, making three times the progress of hand-drilling. Your Committee believe this to be the most perfect rock drill yet produced, and award it a *Gold Medal.*

The Air Compressor was in operation in the boiler-house outside the Fair, and furnished air to the drill. It has required careful study to perfect it. The adjustment of cranks is such as to produce the greatest compression at the moment that the steam-piston is travelling the fastest, and also to cause the engine to stop when the air is compressed to a given point, and to start again when an increase of pressure is required. It is simple in construction, efficient and durable. Your Committee believe this machine to be the best yet produced for the purpose, and award a

Silver Medal.

No. 2.

BUILDING MATERIALS AND HARDWARE.

JUDGES:

Jona. Preston,	Daniel Davies,
Robert Orr,	J. Milton Roberts,
Job A. Turner,	George Allen.

584. I. S. Hill and Andrew Burnham, *East Boston.* Angular piece of Cast-Iron Underpinning, and model of wood and iron. *Diploma.*

767. Plaistow Brick Co., *Plaistow, N. H.* Common Face Brick.

508. William G. Reed and S. S. Jackson, *Chelsea.* Improved Chimney. Model in stone and wood. A good article, though the principle is not new.

789. A. Wilbur & Co., *Boston.* Columbian Roofing Slate. A superior article.

966. E. O. Rockwood, *Boston.* Specimen of Roofing Slate, from the Adams Slate Quarry, Northfield, Vermont. Best article exhibited. *Diploma.*

30. Elijah Myrick, *Groton Junction.* Patent Cast-Iron Chimney Caps. Ingeniously made.

873. Story & Mellen, *Boston.* Enamelled Slate Chimney Pieces and Shelves.

384. William I. Page, *East Boston.* Self-Acting Water Closet. *Bronze Medal.*

837. Frederic Waterman, *Charlestown.* One pair Black Walnut Doors. *Diploma.*

81. Edward Boote, *Boston.* Encaustic and Tesselated Tiling. On exhibition only.

753. George W. Robinson & Co., *Boston.* Case of Stair Plates. *Diploma.*

66. S. P. Taylor & Co., *Boston.* Six pieces of Drain Pipe. A very good article.

490. New England Drain Pipe Co., *Boston.* Samples of Drain and Water Pipe, made of Stoneware Clay, and samples of Round Sand Tile, with collars. Good articles.

839. Day & Collins, *Boston.* Five joints Hydraulic Cement Drain Pipe.

310. Morss & Whyte, *Boston.* Wire Railing. Trellis and Flower Stands. Galvanized and Brass Wire Cloth. Wire Hanging Baskets. Tree Guard. For fine display of Wire work, a *Bronze Medal.*

808. L. A. Roberts, *Boston.* Crystal Ventilators. *Diploma.*

834. Daniel Cushing & Co., *Lowell.* Galvanized Sheet-Iron Mouldings. *Bronze Medal.*

47. Brigham, Whitman & Co., *South Abington.* Nails and Tacks. Well manufactured goods.

550. L. Howland & Co., *North Hanson.* Nails and Carpet Tacks. Well made.

585. J. H. Gray & Co., *Boston.* Machine Screws. Highly finished articles.

794. S. S. Putnam & Co., *Neponset.* Five boxes Forged Horse Nails. Two strips improved Clothes Hooks. Very good articles. *Diploma.*

956. Leeds, Robinson & Co., *Boston.* Cut Nails, from the Robinson Iron Co., and the Wareham Nail Co. Well made. *Diploma.*

237. **Bird Brothers**, *Boston*. "Little Giant" Nail Puller. *Bronze Medal.*

221. **Grover & Randall**, *Newton Upper Falls*. Patent Pick. *Bronze Medal.*

409. **Globe Nail Co.**, *Boston*. Horseshoe Nails. Highly finished. *Diploma.*

333. **Alfred Bicknell**, *Boston*. American Glass Window Pulley. Good for light sashes. *Diploma.*

521. **Edward Burnham**, *Boston*. New England Glass Window Weight Pulley. Good for light sashes.

553. **George P. Ramsdell**, *Newtonville*. Hine's Patent Window Pulley. Convenient for light sashes.

245. **Gaylord Manufacturing Co.**, *Chicopee*. Case of Cabinet Locks. *Silver Medal.*

373. **Bogman & Vinal**, *Boston*. Locks, Butts, &c. Good display and well made.

432. **G. B. Lothrop & Co.**, *Boston*. Glass T Handles. Very neat articles.

557. **Pickford & Hollis**, *Boston*. House Trimmings, Locks, Knobs, Fancy Handles, &c. *Diploma.*

626. **Enoch Robinson**, *Boston*. Stand and Case of Door-Knobs, &c. *Diploma.*

911. **C. C. Dickerman**, *Boston*. Case of Patent Permutation House, Store and Office Locks. *Silver Medal.*

1006. **Octavius Cate**, *Boston*. Cate's Patent Burglar-Proof Sash-Lock. An ingenious contrivance for the purpose.

97. **S. W. Merrill**, *Assabet*. Roll Shade Window Blinds. Work easily.

755. **Jos. G. Bicknell**, *Cambridgeport*. Patent Window-Screen. *Diploma.*

2187. EDWIN MACCUBBIN, *Boston.* Four Venetian Blinds. Very neat samples.

181. ADDISON DAVIS, *Boston.* Model of Sash-Fastener for Cars. *Diploma.*

222. B. D. WASHBURN, *Boston.* Blind-Trimmings, Zinc Roofing Shingles, and Models of Blind-Fastenings. For the Blind-Trimmings a *Diploma.*

438. WILLIAM CARL, *Boston.* Window Blind-Fastener. Good article.

539. JOHN W. BAILEY, *Boston.* Stover's Patent Blind-Fastener. Ingenious contrivance.

975. L. MULLER AND C. HOOD, *Hartford, Ct.* Patent Improved Window Blind-Operator. Ingeniously contrived.

377. A. J. HARMON, *Boston.* Weather Strips. *Diploma.*

421. WILLIAM C. FISHER, *Charlestown.* Model of Store Shutter-Bolt. *Diploma.*

871. ORRIL R. CHAPLIN, *South Boston.* Combination Try-Square and Bevel. *Diploma.*

90. MIDDLETOWN TOOL CO., *Middletown, Ct.* Plane-Irons, Starts and Stops, and Harness-Snaps. Well made goods.

202. TUCKER & APPLETON, *Boston.* Bench and Moulding Planes. *Silver Medal.*

570. ADAMS & CLINE, *Boston.* Carpenters' Planes and Hardware. Well finished tools.

134. HENRY F. JENKS, *Pawtucket, R. I.* Jenks' Bench-Hook and Window-Spring. Good articles.

252. RUSSELL PHILLIPS, *Boston Highlands.* Carpenters' Gauge. Ingenious article.

931. C. H. WESTON, *Lowell.* Model Bench, with Weston's Patent Bench-Hook. *Diploma.*

627. H. W. BROOKS, *Boston.* Case containing Brass Hinges, Lamp Goods and Chain. Good articles.

667. HOMER, BISHOP & Co., *Boston.* One Case of Hammers, made by D. MAYDOLE & Co., of Norwich, N. Y. *Diploma.*

281. D. P. FOSTER, *Waltham.* Patent Tubular Bit-Brace. *Diploma.*

475. THOMAS S. HUDSON, *East Cambridge.* Stationers' Hardware, &c. Good quality of work. *Diploma.*

619. GOODNOW & WIGHTMAN, *Boston.* Two Cases Hardware and Tools. *Diploma.*

698. N. SPOFFORD, *Haverhill.* Show-case of Hardware, Bit-Braces and Wimbles. *Diploma.*

976. FERREE & HAYDEN, *Middletown, Ct.* Samples of small Hardware, Blind and Window Trimmings, &c. *Diploma.*

775. A. J. WILKINSON & Co., *Boston.* Machinists' and Cabinet Makers' Tools. *Diploma.*

363. STILLMAN B. ALLEN, *Boston.* Angular Rasps.

555. IRA F. THOMPSON, *Providence, R. I.* Patent Lamina Rasp.

348. WILLIAM KILNER, *Boston.* Case of Files.

574. M. GORMAN, *Boston.* Hand-made Files. Very good article. *Diploma.*

850. A. J. HISCOX, *Lowell.* Case of Files.

483. C. H. CRANE, *Boston.* Emery Cloth. Very good article.

372. F. R. SIBLEY, *Auburndale.* Emery and Crocus Cloth. Very useful article.

46. STRATTON, COREY & Co., *Boston.* Display of Saws. *Bronze Medal.*

140. Henshaw & Co., *Boston.* Saws. Superior workmanship. For the display, a *Silver Medal.*

742. H. M. Hayward, *Boston.* Case of Patent Frame Wood-Saws, Patent Saw-Horse Frame, and Saw Blades.

812. Ellis Saw Co., *Boston.* One case of Saws.

852. R. Hoe & Co., *New York*, by Hussey, Wells & Co., *Boston.* Patent Inserted Tooth Saw, Circular, Mill, Cross-cut, Billet, Web and Metal Saws. *Bronze Medal.*

113. Brown Brothers, *Boston.* Pettes' File Guide for Filing Saws.

120. M. & E. O. George, *Mansfield.* Specimens of Cutlery. Good articles.

286. Geo. H. Chapman, Jr., & Co., *Boston.* Scissors and Shears. Good display.

121. Henry M. Johnson, *Boston.* Vises. Well made.

266. James Massey, *Boston.* Vises and Anvils. Well made.

284. L. B. Hunt, *Hyde Park.* Union Vises. Well manufactured.

474. F. L. Walker, *Boston.* Two Cabinet Bench Vises. *Diploma.*

494. George Stone, *Boston.* Parallel and Adjustable Vise. *Bronze Medal.*

540. Joseph H. Lewis, *West Duxbury.* Vise. Patented May 12th, 1869. *Diploma.*

948. New England Vise Co., *Fitchburg.* Iron Vises. Good articles.

434. Alexander Chisholm, *Boston.* Tuyere for Blacksmith's Forge. *Bronze Medal.*

514. Naylor & Co., *Boston.* Bundles of Steel.

718. Boston Rolling Mill, *Cambridgeport.* Seven bundles and one coil of Norway Iron. *Diploma.*

280. Daniel Wright, *Waltham.* Patent Clamp Screw Nut. *Diploma.*

608. United States Standard Nut Co., *Boston.* Case-hardened Hexagon Nuts. *Bronze Medal.*

62. L. O. Crocker, *East Braintree.* Conductor's Punches. *Bronze Medal.*

234. Charles S. Drew, *Boston.* "Little Giant" Wheel-Jack. *Diploma.*

285. A. C. Norcross, *Boston.* Patent Key Rings. Ingeniously made.

392. American Sleigh and Carriage Iron Co., *Boston.* Samples of Inlaying Woods. Very good samples.

972. Ozro Hancock, *Winchendon.* Card of Pail Ears. Very neat and useful.

486. G. L. Bailey, *Boston.* Forbes' Patent Acme Club Skates. Foreign made. For exhibition only.

882. John P. Lovell & Sons, *Boston.* Case of Skates. *Bronze Medal.*

888. J. J. Walworth & Co., *Boston.* Nason's Patent Vertical Tube Radiator. This consists of a base of cast-iron, into which wrought-iron upright tubes are screwed, having their upper ends closed by welding, each tube standing independently, so that the joints are not affected by expansion or contraction. In the centre of each tube is a thin strip of metal, passing from the bottom nearly to the top, thus making two semi-circular tubes, communicating at the top; this induces an *upward* current of steam on one side, and a *downward* current of air on the other, thus effectually and quietly expelling the air, and filling the radiator with steam. *Silver Medal.*

891. William Mills & Co., *Boston.* Marble Slab Wash Stand and Fixtures, Enamelled Iron Wash Stand, Copper Bath Boiler, Planished Copper Bath Tub and Fixtures, Galvanized Iron Sink, Seamless Brass Tubes and Fittings for Plumbing Work, Swing Urinals, Enamelled Hopper and Trap combined, Improved

Valve Water-Closet, Seat Bath Tub, Silver-Plated and Brass Faucets, and Improved Shampoo Apparatus. For display, *Diploma.*

893. T. S. Clogston & Co., *Boston.* Patent Steam Radiators. For the improvements since the Tenth Exhibition, when a Silver Medal was awarded, we now award a *Diploma.*

Ornamental Screens and Slabs, Ring Pipe, Ornamental Summer Front-Piece and Grates. For the Screen and Connecting Pipe, a *Bronze Medal.*

No. 3.

STOVES, RANGES AND FURNACES.

JUDGES:

Nathaniel J. Bradlee,
Daniel Chamberlin,
L. Miles Standish,
Nathaniel Adams.

We have carefully examined the Stoves, Ranges, Furnaces, and other apparatus for cooking, and for warming and ventilating rooms, that were submitted for our inspection. In making this examination, and in giving our opinion, it must be borne in mind that we were unable to test the merits of the principal forms by actual trial, as it would require months to obtain satisfactory results by such a process. We therefore give our judgment, after studying the advantages and disadvantages of each.

A large number of the contributors were personally present, and explained their various inventions to the best of their ability, and if we were simply to decide the merits of each upon their statements, all that would be necessary for us to do would be to award a Gold Medal to each; but as our views differ so widely from theirs, we were obliged to give considerable time in making our examinations, the result of which is herewith submitted.

257. Edward Hatch, *Charlestown.* Down Draft Economist Stove.

315. Loudon & Tower, *Boston.* Eaton's Patent Car Stove. A well made stove, but has no marked improvement requiring especial notice.

407. Joseph A. Talpey, *Somerville.* Attachment to cook-stove.

481. Whitney & Bridges, *Boston.* Patent Car Stove. The arrangement of the dampers renders this Stove perfectly safe, in case it should be tipped over, as they close tight whenever it varies from a perpendicular position. *Bronze Medal.*

546. Boston and Maine Foundry Co., *Boston.* Three Cooking and one Heating Stoves. These Stoves have been spoken of in former reports on account of the superior quality of the castings, and have also received a premium. Those exhibited this year are fully up to the high standard of the former exhibitions.

575. William Wilson, *Boston.* Air-Tight Cooking Stove.

562. Charles Williams, *Manchester, N. H.* Two Williams' Double Oven Cooking Stoves. Soapstone Stove. These Stoves are well made, and the arrangement of the hearth and flues has many advantages. *Bronze Medal.*

The Soapstone Stove was exhibited at a previous Exhibition, and received a Medal for its superior merit of workmanship, and its downward draft flues.

618. Thomas A. Westcott, *Boston.* Cooking Stove. This Stove is called the Emperor Gas-Burner. The oven is provided with a double top, the inner plate being made in sections, with cap joint, which gives room for expansion and contraction; the space between the two being so arranged as to admit a current of air, which passes directly around the oven, thus increasing its efficiency. *Bronze Medal.*

670. Miles Pratt & Co., *Boston.* Two "Pratt's Admiral" Cooking Stoves. This Stove has many improvements—a large oven, patented folding rack attached to the oven door, the ventilation of the oven, its arrangement for hot closet and hot water reservoir; and is also provided with very large flues. *Silver Medal.*

711. Pratt & Wentworth, *Boston.* "Peerless" Cooking Stove. The superior finish of this stove deserves especial notice, being the best we have ever seen on exhibition; but aside from its beauty it has many important improvements, such as the ventilation of the oven, and the arrangement of the flues by which economy of fuel and increased heat to the oven is gained. *Silver Medal.*

556. **George W. Walker & Co.**, *Boston.* Two Stewart Cooking Stoves, two Stewart Parlor Stoves, Walker's Patent Wood Cooking Stove, Walker's Reversible Griddle, Whittier's Steam Radiators. The Stewart Cooking Stoves have been noticed, and received a premium at a former exhibition.

The Reversible Griddle appears to us to be an improvement, although we do not pretend to be versed in the art of cooking.
Diploma.

Whittier's Steam Radiator is a decided improvement, both in the arrangement of its valves as well as its joints, being less liable to leak, and having more rapid radiation by its arrangement of air and steam passages. *Silver Medal.*

534. **Whitney & Tappan**, *Boston.* Cambridge Gas Stoves. These Stoves are arranged to be connected like other stoves with a chimney, which will prevent any unpleasant odor in the room, at the same time acting as a ventilator; both of which we consider of great advantage in this kind of stove. *Diploma.*

57. **Butler & Co.**, *Boston.* Revolving Light Base-Burning Parlor Stove. A very neat-looking stove.

176. **Estate of William White**, *Boston.* Six Base-Burning Stoves. These Stoves are fully equal to the others on exhibition, which are constructed on the base-burning principle.

200. **John L. Hanson**, *Boston.* Two Stoves and two Furnaces. We should say of these Stoves the same as of No. 176, and of the Furnaces, the same as of No. 65.

668. **Josiah M. Reed**, *Boston.* Two Portable Cooking Ranges, one case of Stove Findings, two pairs Patent Boot Crimps. These Ranges have an excellent reputation, and have received a diploma at a previous exhibition.

693. **Edward Whiteley**, *Boston.* Patent Seamless Greenhouse Boiler, Patent Seamless Jacket Kettle, Hotel Range, House Range, Charcoal Boiler and Hot Closet. The Committee consider the Patent Seamless Greenhouse Boiler a good article, and very well adapted to the purpose for which it is made.
Bronze Medal.

The Jacket Kettle is well made, but two heavy for general use.

The Ranges are fully up to those exhibited at a former Exhibition, when they received a Silver Medal.

36. J. & J. Kohler & Co., *Boston.* Furnace. The arrangement of this Furnace is perfectly original in principle, and has considerable merit, especially the two distinct hot-air chambers, which enable the furnace to heat rooms equally and at remote distances.
Bronze Medal.

65. Larrabee, Brothers & Co., *Boston.* Two Furnaces. These Furnaces are on the base-burning principle, and known as the Henderson Furnace. We are of the opinion, that the inconvenience of being obliged to have the feed door at so high a point, would counteract all benefit derived from the base-burning principle.

172. Fawcett & Hawkes, *Boston.* Radiating Furnace Range, and Oriental Base-Burning Parlor Stove, with Oven. This Furnace was exhibited at the last Exhibition and received a Medal.

376. Levi Chubbuck, *Boston.* Furnace, Brilliant Base-Burning Stoves, Soft Coal Grate. This Furnace has considerable merit, with several improvements. *Bronze Medal.*

Mr. Chubbuck exhibited two of the well-known "Brilliant" Stoves, patented by Treadwell & Hailes, and manufactured by J. F. Rathbone & Co., Albany, N. Y.

The Soft Coal Grate is worthy of notice, being well adapted for the purpose. Its freedom of escape for gas through the large regulating damper and valve, and its polished metal back and jambs give increased heating power over soapstone, which is generally used. *Bronze Medal.*

809. Norcross & Woodbury, *Augusta, Me.* Coal Portable Furnace. This Furnace, which is called the "Dirigo," has some new features, which we consider of advantage. *First*, its low construction, thus enabling it to be put in many cellars where other furnaces could not be put. *Second*, its arrangement of joint to prevent injury from expansion and contraction. *Third*, its large radiating surface. The arrangement of the grate we think defective.
Bronze Medal.

883. Seavey & Co., *Boston.* Seavey's Combination Furnace, with Amory's Patent Radiator.

Sample of Phinney's Patent Register Ventilators and Borders.

A model of Amory's Patent Radiator was exhibited at the last Exhibition, and is spoken of at some length on page 51 of the Report of 1865. We were unable to see any successful experiments with this Radiator, and therefore cannot give an opinion. We have our doubts as to its success for small house furnaces, for the want of sufficient heat to ignite the gases after they have once left the fire-pot. The sample of Ventilating Register we consider an excellent article.

100. J. Reynolds & Son, *Philadelphia, Pa.* Wrought-Iron Heater. This furnace is entirely new in this city, but is extensively used in Philadelphia, and after a careful examination, we are satisfied it has considerable merit, and many advantages over cast-iron furnaces. The arrangement for introducing cold air, and its freedom from all dampers, are worthy of particular notice.

Silver Medal.

133. Munroe Morse, *Franklin.* Boiler-Flue Cleaner, and a section of Furnace Grate-Bar.

142. F. Browning, *Cambridgeport.* Combined Clothes Drainer and Lifter. A useful and well arranged article. *Diploma.*

362. Benjamin F. Holbrook, *Boston Highlands.* Model of Rotating Bed-Plate, and Adjustable Grate for Stoves and Furnaces. Something new, and, in our opinion, a very good article.

Bronze Medal.

524. A. O. Corbett, *Boston.* Grate-Bar for Furnaces of Stationary Engines.

567. J. A. Paine, *Salem.* Danforth's Patent Steam Wash-Boiler.

765. Joseph Atkinson, *Newbury, Vt.* Model of Vale's Rotary Oven.

833. Orbeton & Lang, *Haverhill.* Fire-Boxes to Cooking Stove, with Concentrated Draft. A very good article for summer use. *Diploma.*

No. 4.

IRON AND BRASS CASTINGS, GAS FIXTURES AND COPPER WORK.

JUDGES:

ALBERT W. SMITH,	GEORGE W. ROBINSON,
GILMAN JOSLIN,	NATHANIEL W. TURNER.

888. J. J. WALWORTH & Co., *Boston.* Walworth's Patent Manifolds, Steam Valves, Steam and Gas Fittings, Steam Fitters' Tools, &c. The Patent Manifolds exhibited by this firm, are a contrivance used in the warming of rooms by steam-pipes placed upon the wall, by which *all* or a *part* of the radiating pipes can be used as may be required. In a mild day in winter, one or two pipes out of four or five, are sufficient to warm the room. This could never be done by the usual method, and an economy in the use of steam is thus gained. The apparatus is very much simplified, and the expense in putting up greatly reduced. They also exhibit remarkably fine specimens of Composition Castings for Steam-Valves, &c., and also Malleable-Iron Steam and Gas Fittings. Also a case containing *Steam Fitters' Tools*, of most improved construction, together with screw-plates and drills, all of which have been got up by this establishment, which has been so many years in developing articles of use in the department of steam and gas work.

Diploma.

300. NATHANIEL JENKINS, *Boston.* Iron and Brass Globe Valves, and Brass Gauge Cocks,—Jenkins' Patent. Mr. Jenkins warrants his composition from which his disks are made, to stand steam at 125 lbs. pressure, and not to adhere to any kind of metal, hot or cold; and is suitable for safety, check, or any other valve.

Silver Medal.

612. A. HALLOWELL, *Lowell.* Case of Brass and White-Metal Goods, two Gas-Stoves, and piece of Pipe showing various Burners.

811. S. T. SANBORN & Co., *Boston.* Gas-Pipes of assorted sizes, Steam-Valves and Steam-Whistles. A very nice display.

Diploma.

814. AMERICAN STEAM GAUGE Co., *Boston.* Steam-Gauges and Instruments, Steam-Whistles, &c. *Diploma.*

878. WILLIAM BLAKE & Co., *Boston.* One Bronze Monumental Tablet and other Brass Castings. Very fine specimens of workmanship. *Bronze Medal.*

885. SHAWMUT IRON WORKS, *Boston.* Thirty-three pieces Cast-Iron Soil, Smoke and Steam Pipe. Very light and smooth castings, remarkably even in thickness, showing superior skill and workmanship in their construction. *Bronze Medal.*

566. MOSES H. FREEMAN & Co., *Boston.* Pipe Cutter. This instrument is thought to be an improvement on any with which we are acquainted; its operation is easy and expeditious, and when its work is performed, it leaves no burr. It is not liable to get out of order, and is easily sharpened when required. *Bronze Medal.*

603. A. ROBES AND J. C. CHAPMAN, *Somerville.* Pipe Cutter.

641. A. E. ROWE & Co., *Boston.* Bells, and materials for hanging them. Some very nicely finished work.

342. HALLOWELL & ATHERTON, *Lowell.* Patent Gas Sad Irons. This is not a new invention, but has an improved burner, which they claim does not emit any of that bad odor generally given from all other burners. *Diploma.*

773. C. H. JOHNSON AND C. LIBBEY, *Boston.* Lot of Gas Burners, Shades, and Reflectors. These have been in use a number of years. They claim that forty per cent. is saved by this mode of lighting.

866. AMERICAN GAS TIP MANUFACTURING Co., *Cincinnati, O.* Lot of Gas Tips. The merit claimed for these Gas Tips is, that the material from which they are made is a *non-conductor* of heat, *impervious* to *fire*, *water* or *acid*, never gumming or corroding; the intensity of the heat only having the effect to harden them. The orifice from which the flame arises, always remains the same, thereby giving a uniform flame. *Diploma.*

915. HENRY S. HALL, *Boston.* Apparatus for Raising and Lowering Chandeliers, and other Fixtures.

2486 and 895. S. A. STETSON & Co., *Boston.* Mantel-Clocks and Bronzes. Exhibited by them, and manufactured by MITCHELL, Vance & Co., New York. In beauty of design and style of finish, fully equal to the best imported. Of their merits as time-keepers we have had no means of judging; but they are said by the manufacturers to be superior to the best French movements. Many of these Clocks are decorated with groups and figures in bronze, which, as works of art, are highly creditable to the manufacturers.

Gas-Fixtures, Chandeliers, &c. The only display in this branch of manufactures is that made by S. A. Stetson & Co. of Boston, from the factory of Mitchell, Vance & Co., of New York, comprising a large variety of patterns, new and beautiful in design, well made and finely finished, fully sustaining the reputation of these well-known manufacturers for the excellence of their work. Their improved Centre-Light Extension, as applied to chandeliers, is a new and useful feature, and, as we consider, a meritorious invention. Messrs. Stetson & Co. certainly deserve much credit for the taste shown in arranging this display of Gas-Fixtures and Bronze Clocks, for which, and the display of Ornamental Wood-Mouldings named in the Report of Committee on Furniture, is awarded a *Silver Medal.*

Gas-Stoves, for Heating and Cooking. The Dome Gas-Stove, manufactured by Lazaer & Sharp, New York, exhibited by S. A. Stetson & Co., Boston, differs from the other gas-stove burners we have seen, in the manner of regulating the supply of gas and air, so necessary to perfect combustion. The arrangement of the perforated plate, beyond the reach of dirt or damage from the flame, and the air-tube through the centre of the burner, bringing an upward current of air in contact with the aerified gas at the point of ignition, more thoroughly oxygenizing it and securing a strong and steady flame, is, we think, an essential improvement over other heaters. They also exhibit a Broiler and Oven to be used on these Stoves, which seem admirably adapted for the purpose. For the gas-cooking apparatus we award a *Silver Medal.*

393. Cushing & White, *Waltham.* Lot of Copper Weather-Vanes. Some elaborate designs.

527. J. Harris & Son, *Boston.* Copper Weather-Vanes. The Vanes exhibited by this firm made an exceeding fine show. Messrs. J. Harris & Son claim to be the only manufacturers of copper weather-vanes. Copper has advantages over zinc or other metals which have and still does compose a part of most of the vanes now in use; inasmuch as the goldleaf will retain its brilliancy much longer on copper than on zinc or other metals, as copper is less liable to corrode. *Diploma.*

939. **Hicks & Badger**, *Boston.* Lot of Copper Goods. A nice lot, showing superior workmanship.

No. 5.

AGRICULTURAL IMPLEMENTS.

JUDGES:

Dr. George B. Loring,	Joseph Breck,
Simon Brown,	Charles L. Flint,
Nathaniel P. H. Willis,	Joseph F. C. Hyde.

The Committee on Agricultural Implements were gratified with the importance and variety of the implements and machines submitted to their investigation. The importance of useful and convenient machinery for the various processes of agriculture, is recognized by all who are in any way interested in the cultivation of the soil. The price and scarcity of farm-labor, and the consequent necessity of economizing time; the absence of skilled labor and the necessary substitution of machinery for the hand of man, render the application of mechanical forces to the land valuable and important. That we are yet in the infancy of this branch of invention there can be no doubt. The best of our machines and implements have been brought to their present degree of perfection within a very few years. The shovel, the hoe and the fork of to-day are vastly superior to the shovel, hoe and fork in use when the present generation of laborers came upon the stage. At the beginning of the present decade, the mowing machine was more of a hindrance than an assistant in the work of securing the hay-crop. Plows, horse-hoes, cultivators and seed-sowers, have been recently improved in many most important points. And it remains still for the ingenious inventor to advance into that perfection of machinery which will enable the husbandman to pulverize his soil, apply his fertilizers, sow his seed, cultivate and clean his crop, and secure his harvests, in a far more expeditious and economical manner than all these operations are now performed. Clean, accurate, systematic work may be done upon the land by machinery, as well as in a cotton mill. And we witness with pleasure the incessant effort which is now made to bring the best mechanical forces into the business of agriculture.

The Committee found among the articles submitted to them, many which seemed hardly to come within their province as judges of agricultural machinery; but they have endeavored to examine with care, and to make their awards with a just regard for the inventor, as well as for those who are to apply the inventions to the various business of the farm.

26. WHITTEMORE, BELCHER & Co., *Boston*. Collection of Agricultural Implements. *Bronze Medal.*

890. PARKER & GANNETT, *Boston*. A Collection of Agricultural Implements. This collection was large and valuable, and constituted an important addition to the Exhibition. The Committee were struck with the careful workmanship and good material manifested in this as well as in other similar collections; and they cannot too strongly urge upon the manufacturers of agricultural implements the importance of these two points to inspire confidence in the farmer. A well-built machine will always make friends, who will be lenient to its defects whatever they may be. For this collection, the Committee award a *Silver Medal.*

67. JOSEPH BRECK & SON, *Boston*. Hill's Lawn-Mower. *Silver Medal.*

138. E. D. & O. B. REYNOLDS, *North Bridgewater*. National Hay Tedder; Eagle Seed Sowers, with Hill's Dropping Attachment, and Clipper Wheel-Hoe. *Bronze Medal.*

316. G. WARREN & Co., *West Millbury*. Cranberry Rakes. *Diploma.*

645. CLIPPER MOWER AND REAPER Co., *New York*, by GEO. B. WEAVER, Agent, *Newport, R. I.* One Horse Clipper Mower. *Diploma.*

663. ALBERT J. GREENE, *North Leominster*. Hand Wheel-Rake. *Diploma.*

655. GEORGE E. BURT, *Harvard*. Burt's Balance Attachment for Mowing Machines. Of this invention Mr. Burt says:

> "The nature of this invention consists in arranging and hanging the seat to mowing machines in such a manner, that the driver's weight, when in the seat, shall operate partially to lift the cutter-bar, proportionately lessening the draft of the machine.

"Also in constructing and attaching a foot-lever, arranged in such a manner as to act in conjunction with the operator's weight, and enable him very quickly and easily to raise the cutter-bar to pass obstacles, or hold it elevated with his foot to turn corners, thus giving him the use of both hands to manage his team when turning or passing obstacles. The following facts are proved to be the results of the improvements:

"*First.* By balancing the cutter-bar, the draft is lessened twenty-five pounds, by dynamometer test.

"*Second.* Security for the driver as he braces himself back into the seat when he elevates the cutter-bar, instead of reaching forward out of the seat for the hand-lever, as is commonly done.

"*Third.* More expedition and better execution of the work performed, as the driver has both hands to give his team at all times.

"*Fourth.* The cutter-bar resting lightly on the ground, will glide over many unseen obstacles which would otherwise arrest it, thereby avoiding the heavy strain to the machine, and the liability of throwing the driver from the seat.

"*Fifth.* The driver is enabled to mow rough land with safety to himself and the machine.

"*Sixth.* It gives confidence to new beginners, and enables them to do at once and better what they otherwise could not do."

The importance of this invention is generally acknowledged; and it is considered a valuable addition to the construction of mowers.
Gold Medal.

838. AMES PLOW CO., *Boston.* One Plow; American Hay Tedder; Burt's Horse Rake; Perry Mowing Machine.
Bronze Medal.

870. E. E. LUMMUS, *Boston.* One Horse "Kniffen" Mowing Machine; Monitor Wheel-Jack; Jar Superphosphate.
Bronze Medal.

881. AMERICAN AGRICULTURAL WORKS, *New York.* Columbian Combined Mowing and Self-Raking Machine. *Diploma.*

425. F. F. HOLBROOK & SMALL, *Boston.* Extra Stubble Mould-Board and Share for same. Patent One Horse Plow with Clevis. No. 3 Premium Horse-Hoe. Patent Regulators and Seed Drill.
Bronze Medal.

Holbrook's Patent Two Horse Swivel Plow. Patent Sod Plow, with Clevis for three horses. *Bronze Medal.*

191. GEORGE A. WOODWARD, *Boston.* Harrington's Seed Sower and Cultivator. *Diploma.*

217. G. E. HERRICK, *Lynnfield.* Improved Danvers Seed-Sower and Weeding Hoe. *Diploma.*

969. ANDREW R. WORTH, *Nantucket.* Worth's Improved Seed-Sower. Mr. Worth has endeavored to provide a seed-sower, which will use seed economically, drop it at equal distances in the rows and cover it thoroughly; three important points, affecting the expense of seeding the land, the cultivation and thinning in the rows, and the successful germination of the seed. His machine is an ingenious work. With regard to the proper covering of the seed, a most important point in the mind of every cultivator, he writes:

> "Your confidence in the roller in pressing the soil upon the seed will be again confirmed by what I saw when I planted a row of sage about ten feet long.
>
> "I put each seed regularly and carefully into a drill made with a small stick, and covered it with my hands one-half inch deep, pressing the soil very lightly, but not a plant came up.
>
> "It was so late in the season that I waited until the next spring before trying again; I then planted seed carefully raised and gathered in my neighborhood the previous season. They were planted in the same manner as before. When it was time for the plants to show themselves, not one came up. Determined to ascertain, if possible, why they did not come, I took a clear, bright day, so that I could see every grain, however small it might be, and I soon found that the seeds were scattered on the surface of the ground.
>
> "It struck me that when the seed swelled and cracked the shell, it must have sprung out of the ground, and then losing the moisture, the germ withered.
>
> "I planted again, pressing the earth this time very firmly about the seed, and pounding it solid. This time the seed came up as regularly as they were planted. I have found it best when planting flower-seeds to press the soil firmly, having noticed that with several kinds of seed they will spring out on the surface and die unless the soil is well pressed upon them."

There is no doubt that Mr. Worth is right, and that the failure of many plantings is caused by imperfect covering of the seed. The use of a heavy roller is found to be very useful on many field crops, where the seed has been imperfectly covered by the seed-sower. To this machine the Committee award a

Bronze Medal.

144. DUNN EDGE TOOL CO., *West Waterville, Me.* One case of Scythes. *Bronze Medal.*

935. A. S. PHILBROOK, *Claremont, N. H.* Machine for bending Scythe-Snaths. *Bronze Medal.*

766. M. S. HOTCHKISS, *Syracuse, N. Y.* Calliper Horse Hay Fork. *Diploma.*

118. OLIVER AMES & SONS, *North Easton.* Shovels. An admirable collection from this well-known manufactory. *Bronze Medal.*

466. OLIVER AMES & SONS, *North Easton.* Patent Welded Shovel. Patent Welded Spade. *Silver Medal.*

848. BROWN & SHERMAN, *Boston.* One case of Sample Shovels. A collection of well-constructed, strong and well-balanced implements. *Bronze Medal.*

9. W. A. CURRIER, *Exeter, N. H.* Yankee Corn-Poppers and Coffee-Roasters. *Diploma.*

12. GEO. F. RICKER, *Cambridgeport.* Folding Lunch-Boxes. Milking-Stool and Pail-Holder Combined.

49. WM. T. WOOD, *Arlington.* Implements for Securing Ice. A well finished and useful collection. *Bronze Medal.*

78. C. W. FORBUSH, *Boston.* Bread-Mixing and Kneading-Machine. The importance of a good machine for bread-making is now fully realized. The time, strength and skill required for the hand-manufacture of the staff of life, are so great that the consumer is too often deprived of a well-made and nutritious supply. The art of bread-making has declined, and seems almost in danger of being lost. A good substitute, therefore, for the patient and skilful hands of our ancestors, is particularly desirable, and will be hailed as a blessing in every well-ordered household. The award to this Machine is a *Diploma.*

68. J. D. BURDICK & CO., *New Haven, Ct.* No. 4 and No. 2 Burdick Hay-Cutter. *Bronze Medal.*

104. LUTHER THAYER, *Brighton.* Green Mountain Feed-Cutter. To the farmer and stabler nothing is more useful than a good feed-cutter. The use of cut-fodder, as a matter of economy and health in the business of feeding cattle and horses for certain

purposes, is so general that a labor-saving machine for this purpose is of great value. Among the many varieties, too many are deficient in strength, and in the power of retaining a good cutting capacity, for any great length of time. On these two points there is much room for improvement, and it is to be hoped that inventors and constructors will not forget their value. For this machine, the Committee award a *Diploma.*

170. W. O. Sweet, *West Mansfield.* "American" and "Excelsior" Movable-Comb Bee-Hives. It is claimed for these Bee-hives that they are "so arranged as to give large amounts of surplus honey, in plain or fancy styles of glass jars and boxes; and to give the bees the greatest natural convenience for storing honey and raising brood." "They are constructed single and double walled; the single-walled being tall or upright to conform with the natural law of heat ascending. The low, flat hives are double-walled, with dead-air spaces, to keep warmer in winter on out-of-door stands, and cooler in summer. They have the easiest place of access to the interior of the hive for handling bees, or removing combs at all times." The art of bee-keeping has been greatly improved within the last five years by the employment of the system of movable-comb hives; and they are considered by the Committee as well entitled to the patronage of the community.

105. L. W. Nichols, *West Sterling.* Fruit Safe. A neat, ingenious and useful contrivance. *Diploma.*

158. Cyrus G. Cooke, *Boston.* Croly's Extension Step-Ladders. *Diploma.*

260. E. B. Rich, *South Boston.* Automaton Feed-Crib. This seems to be an ingenious invention for regulating the feeding of horses in the stable, the mechanism applied being similar to that applied to an alarm-clock. It claims that when provided with feed and water, it will furnish the horse with a supply without the aid of a groom, at any given hours. Of its working the Committee were unable to judge; but they consider it worthy of careful examination by those who are erecting good stables.

323. Holden Brothers, *Woburn.* Lightning Churn. *Diploma.*

345. George F. Waters, *Newton.* Hand Pruning Knife. *Bronze Medal.*

397. **Washburn & Co.**, *Boston.* Three cases Garden Seeds. Carefully and beautifully arranged. *Diploma.*

418. **Wm. Bell & Co.**, *Boston.* A, B and C Meat-Cutter, a Sausage-Stuffer, Ham Pump. *Diploma.*

491. **M. D. Drake**, *Providence, R. I.* Improved Pitman Boxes for Harvesters and for Carriage Wheels. Improved Graduated Belt Punch.

513. **G. Perry & Co.**, *Boston.* Portable Grapery and Hotbed. A simple invention which recommended itself highly. *Bronze Medal.*

517. **John A. Green**, *Waterford, Me.* Model of Patent Horse Power, Patent Roof Bracket, Patent Grindstones.

532. **Prince & Co.**, *Boston.* Dickson's Patent Tripod Stump-Pulling and Rock-Lifting Machine, Model Patent Rice Hulling Machine, Patent Coffee Hulling Machine.

580. **Holmes & Blanchard**, *Boston.* Two Millstones, French Burr, two Portable Mills, Stump and Rock-Lifter. For the Millstones, and Portable Mill, a most important machine for the farm, *Diploma.*

For the Stump and Rock-Lifter, *Diploma.*

614. **Athol Machine Co.**, *Athol.* Meat Choppers. *Bronze Medal.*

706. **Ira Copeland**, *North Bridgewater.* Continental Horse-Hoe, Fruit Package, Strawberry Runner Cutter, Hand Hoe or Weeder. *Diploma.*

922. **L. M. Ham**, *Boston.* Stable Ramp, Manger, Hay Rack, Gutter, &c.

929. **Munroe Brothers**, *Fitchburg.* Stand of Apple-Parers, Egg-Beater, Callipers, Flour Boxes, &c. *Diploma.*

951. **Samuel Harris**, *Springfield.* Sifting Machines. Remarkable for simplicity and durability. *Bronze Medal.*

2205. **Benjamin W. Putnam**, *Jamaica Plain.* Self-Watering Flower-Pots. An admirable and tasteful contrivance for arranging and watering house plants. *Bronze Medal.*

No. 6.

MILITARY GOODS AND FIRE ARMS.

JUDGES:

Henry Lee, Gen'l John G. Foster,
Gen'l Samuel E. Chamberlain, Edward C. Cabot,
G. A. Peabody.

Military Goods.

There were very few military goods exhibited.

2217. Pollard & Leighton, *Boston.* Regalia and Military Goods. A handsome display of imported military equipments and ornaments, also of swords, sashes, belts, shoulder-straps, military caps, and richly embroidered aprons and baldrics manufactured here. A Bronze Medal was deservedly awarded to this firm for a similar exhibition in 1865.

Fire Arms.

In Fire Arms there has been an improvement since the last Exhibition, although no such strikingly new inventions have appeared as during the preceding four years of war.

The Committee regret that their report must necessarily be incomplete; the workmanship and construction of the arms submitted to them, more especially the mechanism for loading and discharging, and their general adaptability for the proposed service have been carefully considered; but as to their precision, range, penetration and rapidity of fire, the Committee have had neither time nor opportunity to form a reliable judgment, except through the reports of boards of inspection by whom some of the arms have been thoroughly tested.

615. American Nut and Arms Co., *Boston.* One case Pistols. This case of nicely finished double-barrel rifle pocket pistols merits a *Diploma.*

654. H. O. Peabody, *Providence, R. I.* One case Peabody Rifles and Muskets. The Peabody Rifle was fully described by the Committee of 1865, except that the piece then exhibited was only half-stocked, but it is proper to state that as an arm for military service, combining solidity and simplicity of construction, symmetry

of form, range and penetration, facility of manipulation and consequent rapidity of fire, indifference to exposure and resistance to over-loading, the Peabody Rifle has proved itself superior to all other single breech-loaders examined by military boards, in this and almost all the European States.

As a premium was awarded at the last Exhibition, the Committee can only repeat the opinion then expressed, and since so fully confirmed, that this is the best single breech-loader for military service.

818. BROWN MANUFACTURING CO., *Newburyport.* This Company exhibit a case of Ballard Breech-Loading Rifles and Pistols. A description was given and a Silver Medal fitly awarded these beautiful arms in 1865.

863. BOYD BREECH-LOADING ARMS CO., *Boston.* Boyd & Tyler's Patent Central Fire Breech-Loading Double Barrel Sporting Guns, with Patent Combination Shell. A steel pin, projecting forward between the barrels, holds them in position. Drawing back this pin by means of a thumb-piece in rear of the hammers, the barrels turn to right or left upon a spindle, and allow the shell to be inserted or withdrawn, the latter movement being aided by retractors. By means of beveled cam-washers on the end of the spindle and a shoulder on the base of the barrels, the joint is loosened in opening and tightened in closing, so as to prevent the escape of gas or the intrusion of dirt. The inventors claim that the mechanical principle of their gun is superior to that of the French-crutch pattern, where the barrels are hinged upon the stock, in respect to tightness of joint, to balance, to the uniform spring of the barrels, to the exclusion of sand and dirt, and to ease of manipulation.

The Committee admired the workmanship in all parts of these arms. Though the details are delicate and ingenious, they did not feel convinced of their superiority as to simplicity of construction and handling. As specimens of sporting guns of superior quality of workmanship, mostly of American manufacture, the barrels being made for this Company at Birmingham, England, the Committee award a *Bronze Medal.*

This Company also exhibited the Boyd Patent Combination Shell, which appeared to be well contrived and adjusted, as it is certainly well manufactured, but the Committee had no opportunity to test its qualities. For the quality of the workmanship they award a *Diploma.*

882. JOHN P. LOVELL & SONS, *Boston.* Smith & Wesson's Pistols; E. Allen & Co.'s Pistols; E. Allen & Co.'s Breech-Loading Double Barrel Guns; J. H. Crane's Breech-Loading Double Barrel Guns; Hall & Hubbard's Metallic Cartridges; Tatham & Brothers' Shot. A large assortment of Revolvers of every size, displayed in a highly ornamented case, contributed by the well-known manufacturers, SMITH & WESSON. As no change has been made in these pistols, except a trifling alteration in the outline of the cylinders, since 1865, when a Gold Medal was awarded to them as the best of the Metallic Cartridge Revolvers, the Committee can only recognize the superb finish of the arms, the gold and silver mountings, and delicate engraving, by a *Diploma.*

JOHN P. LOVELL & SONS also have a Show Case containing a variety of articles, including Smith & Wesson's Revolvers, Ethan Allen & Co.'s Revolvers, which closely resemble the Smith & Wesson in general mechanical principle, the difference being that, in order to disengage the cylinder of the former, the barrel must be turned back, while in the Allen the barrel is secured to the stock by a metal housing, and there is no spring or hinge to get out of order; and, further, that in order to disengage the cylinder and eject the shells from the Allen Revolver, the rammer has also to be drawn out. The Smith & Wesson's have the advantage over the Allen Revolvers in respect of symmetry and finish. Another Revolver manufactured by Ethan Allen & Co., struck the Committee as the best Cavalry arm exhibited, inasmuch as the shells can be inserted and ejected without disengaging the ramrod or cylinder, and without moving the barrel. By turning down a cap, the rear of the cylinder is opened for the insertion of the shell while the piece is at half-cock, safety being insured by the immobility of the cylinder when the piece is cocked, and the ejection of the exploded shell is effected by a lever ramrod worked by the guard. The only improvement which suggests itself to the Committee, would be a catch to hold the cylinder in position for inserting and ejecting the cartridge. For this very ingenious, substantial and easily handled Revolver, a great improvement in construction for Army use, the Committee adjudge a *Silver Medal.*

Breech-Loading Double Barrel Shot Guns, by ETHAN ALLEN & Co. The barrels are fixed to the stock, and the piece is loaded when at half-cock by opening a lid hinged at left side of barrels, and inserting the steel shells into the chamber. After discharge the lid is reopened and the shells withdrawn by dropping the guard. The blow of the hammer is communicated to the cap or primer at the base of the shells, by plungers running through the lid. The process of loading can be performed easily and with tolerable rapidity, and without moving lock or barrel; the whole mechanism is simple and strong, the quality of materials and workmanship excellent. Every part of these guns, including the barrels, are manufactured by Messrs. Allen & Co., and for this novel enterprise so well executed, the Committee award a *Silver Medal.*

HALL & HUBBARD'S Metallic Cartridges deserve, for their nice finish and construction, a *Diploma.*

TATHAM & BROTHERS' Shot of superior quality, a *Diploma.*

892. WILLIAM READ & SONS, *Boston.* Colt's Rifles and Pistols, Winchester Repeating Rifles, Maynard Rifles, Assorted Rifles, Carbines and Pistols, Bronze Cannon, Fishing-Rods. Messrs. Read & Sons make, as usual, a grand display of arms and other articles, among which are the Sharp, Maynard, Ballard, Wesson and Remington Breech-Loaders, of established reputation, which having been described and rewarded at former Exhibitions, need no further notice, except the Remington, in which the breech-block has been changed from a thin plate to a solid quadrant, for which improvement in construction of this handy and excellent military arm, the Committee award a *Diploma.*

The Berdan and Joslyn Breech-Loaders did not impress the Committee favorably. The breech mechanism is clumsy and the unseemly projections detract from the symmetry and interfere with the handling of the arms. The Colt Rifles are enlarged Revolvers, and lack the compactness of the best breech-loading rifles. Their Pistols have been adapted to the metal cartridge, which can be easily inserted and ejected without disengaging cylinder or ramrod. The method of ejecting by the hammer is ingenious and easy. It is effected by turning a metal disk in rear of the cylinder to the left, and the pistol can only be discharged when this disk is turned to the right. The process is simple and safe enough for private use, but seems to the Committee too complicated to be put into the hands of a common soldier. For this improvement in construction the Committee award a *Bronze Medal.*

The Winchester, formerly the Henry Repeating Rifle, was described in detail by the Committee of 1865, and several important improvements made after the Exhibition commenced, were noticed in the Report, but could not be considered in the award of the Committee. The Winchester gun, in its principal parts, is identical with the Henry Rifle. The magazine is still a tube under the barrel, but the groove is closed and the tube incased in the wooden stock. It contains fifteen metallic cartridges, which are constantly pressed by a long spiral spring into the tray or feeder which supplies the chamber. The breech is closed by a sliding bolt, consisting of three main pieces. The action is by a long lever forming the trigger-guard, and ending in a handle. By throwing down the guard the lever is moved forward, the bolt withdrawn, the gun cocked, the exploded cartridge case extracted, the tray holding a cartridge from the magazine raised opposite the chamber, and the empty case lifted out. By drawing up the guard to its place, the lever is moved back, the bolt forward, pushing the cartridge before it into the chamber and the tray lowered, when the magazine spring deposits another cartridge in it, and the gun is ready to be fired. The description is long and difficult, but the forward and backward action easy and rapid. The Swiss Military Commission which examined the gun, reached twenty-two shots per minute in shooting with the magazine, and the inventors claim a much greater rapidity of fire. In the Henry Rifle the loading was effected by forcing up a spiral spring, turning a metal sleeve around the muzzle, and dropping the cartridges into the tube, the opening and filling of which interrupted the fire and considerably reduced its rapidity. In the Winchester, by a very simple contrivance consisting of a grooved side-opening into the slide-canal, worked by a spring, through which the cartridge can be easily thrust without changing the normal position of the arm, this process is made much shorter and easier, and the piece can be used as a single breech-loader, reserving the contents of the magazine for an exigency. The only liability to injury in this very perfect arm, is the possible entrance of water and dirt through the side-opening into the magazine, which could be easily protected by a lid. The Swiss Commission state "that in the point of tactics it is much more important to possess a gun which, at a given moment, permits of carrying to the maximum the rapidity of fire, than an arm with which, it is true, a rapid fire can be entertained for a long time, but with which the maximum of rapidity cannot be reached." This arm has been pronounced by several Government Boards, especially by the Swiss, who are perhaps the first judges of arms in Europe, the best repeating-gun, and as uniting the advantage of being used equally well as a single breech-loader. For the great improvements made in its construction, and for its perfect mechanism and workmanship, the Committee feel justified in awarding the highest premium, a

Gold Medal.

Two Bronze Cannon for ships' use, deserve a favorable mention. A Trowel Bayonet, invented by Brevet Lieut. Colonel Rice of the U. S. Army, was deemed by the Committee a well-made implement, much needed as an intrenching tool by our soldiers, but out of place upon the barrel of a musket. For its ingenuity and workmanship, the Committee award a *Diploma.*

A Case of Jointed Fishing-Rods of hornbeam and split bamboo, by Tout of Cambridgeport, seemed to the Committee equal to the best imported articles in shape and finish, and to deserve, as a new application of material of superior workmanship, a *Silver Medal.*

753. George W. Robinson & Co., *Boston.* Brass Yacht or Boat Guns. Beautifully finished and well-mounted. *Diploma.*

No. 7.

MARINE ARTICLES.

JUDGES:

Robert B. Forbes,	Osborn Howes,
Edwin Briggs,	Samuel C. Cobb,
Joshua Baker,	William Marble.

The contributions in this department are not so valuable nor so numerous as on some other occasions. In giving our awards, we are necessarily constrained to compare some of the articles with others of the same general type, although not represented in this Exhibition.

Ship-Steerers, Capstans and Windlasses.

161. L. Kempton, *Boston.* Patent Ship-Steerer. A model showing much gearing, and cumbersome. As it does not appear to be made on any particular scale, it cannot be fairly judged of in a small model. Your Committee therefore recommend the inventor to exhibit one of full size.

681. Nathan Richardson, *Gloucester.* Richardson's Steering Apparatus. This apparatus is well made, of good materials, and of ample power. A similar machine, by the same person, was exhibited at your last Fair in 1865. It has a brake, by which it can be secured in port or at sea, if required; but the office of this brake is more to keep it still, than to prevent movement by the

action of the sea. The latter is accomplished by strong teeth on the band at the rudder head, fitting into strong worms at its sides; these receive all the strain, and the shocks to which they are liable are relieved by India-rubber buffers or blocks. This immovability of the wheel, and the fact that, in the event of striking the ground, the whole apparatus will lift clear of the frame, are the most prominent advantages claimed by the inventor over other steerers, and they are worthy of consideration. He claims that his machine can be furnished as cheap as any, the rate being for the largest size $225, and for the smallest $50, there being several intermediate sizes. There is only one valuable testimonial as to the working of this steerer, it being on the ship Radiant, belonging to Messrs. Baker & Morrill. There are many references to residents of Gloucester and Boston, which are presumed to be from the owners of small vessels, for which class it was recommended at the last Exhibition. While your Committee are disposed to award considerable merit to this apparatus, and to consider it among the best of the many in use, they think it lacks simplicity, and, as it requires seven and a half turns to put the helm from hard up to hard down, its speed is less than the best in use, and this is considered a disadvantage.

Much stress is laid on the convenience of leaving the wheel without danger of its flying round. This will be well in small craft, but in large vessels, steered by well-known apparatus, such as Reed's or Robinson's, the action of the sea ought never to cause the wheel to fly round if it be properly held by the helmsman, and in many cases it will be found very desirable to permit the wheel to turn quickly by the action of the velocity of the ship, as, for instance, in "meeting" the ship after a hard weather helm has been applied. While your Committee conceive that this apparatus has not been long enough in use in large ships to give entire confidence, they are disposed to recommend a *Bronze Medal.*

197. David N. B. Coffin, Jr., *Newton.* One case Windlass Models. Two small models of windlasses worked by capstans on the topgallant forecastle. The vertical shaft of the capstan works on a circular inclined plane, in connection with a fore and aft horizontal arm or shaft, which oscillates and moves the levers in connection with the windlass. One of the models has the usual brake as an auxiliary, to serve when the capstan is required for other work. This machine is not easy to describe, and your Committee doubt its successful application when there are several simple and effective windlasses in use.

506. WILLIAM GOODMAN, *Boston.* One Power Capstan. One Model of Windlass. This windlass is operated by a capstan on the forecastle, six feet from the centre of the windlass. Its shaft rotates a series of inclined planes, so that the power is applied to the levers and ratchet shell in a regular and continuous manner, and so that there is no dead point. The drop incline being shorter than the rising one, takes up the slack in the ratchet shell. The capstan is adapted for a slow or quick motion, say 2 to 1, by merely walking back without tending pawls. The capstan itself is a power capstan independent of the windlass. It has been in use about four years, but there are no testimonials. Mr. Goodman is now building one for Donald McKay's ship on the stocks.

898. JACOB EDSON, *Boston.* Edson's Patent Capstans. There are five sizes, costing from $50 to $150, all being power capstans, in which the power is as one to three. The main barrel works one way, whether the power is used or not, and in reversing the action by merely walking back, it is not necessary to capsize the pawls. This Capstan has been in use about two and a-half years, and is now exhibited here for the first time. It appears to be well made, and the works are easily got at. It is well recommended by those who have used it.

Mr. Edson claims for this capstan that "it has a strong, well proportioned and easy fleeting body, a convenient well-shaped head and a substantial base.

"The finished steel journals, Babbitted bearings, patent oil saucers and double-coned base, give strength, ease of action and durability. If moved to the right, the pawls turn the pinion plate, giving threefold power; if to the left, the outer pawls 'take' directly in the barrel, and the inner ones pass over, making a single purchase." Your Committee recommend a *Silver Medal.*

MODELS OF VESSELS AND TOY BOATS.

293. JOHN HOWE, JR., *East Boston.* Model of Patent Mode of Working Steam Vessels. A small model of a vessel, containing a boiler and pipes, running fore and aft along the bottom, for facilitating the ordinary manœuvres of steamers by ejecting steam under water.

Your Committee are unable, from the smallness of the model, to estimate how far the considerable loss of steam would be compensated by the movement of the vessel. If the boiler be large and full of power, and the pipes large also, the movement might be considerable; but your Committee doubt the economy of the apparatus and cannot express a more full opinion on its merits from so small a model.

337. William Hichborn, *Charlestown.* Boat Detaching Apparatus. This model of a boat and detaching gear appears to work well, the object being to drop both ends of the boat simultaneously. There are many contrivances in use for this purpose, which have been tested by government experts on a large scale. Your Committee cannot award to it any special merit over others.

437. Union Ship Timber Manufacturing Co., *Boston.* Miniature Ship in Frame. Illustrating the process of building by bent timber. Three of your Committee have visited the building-yard of Mr. J. W. Griffiths, at East Boston, where they saw the operation of bending a frame of oak about forty feet long, and also saw a frame on the floor, with knees and beams for both decks in place, nearly ready to be put into a ship on the stocks. They also saw thick timber for knees in the moulding frames, ready to be sawed into knees. To understand and describe the process fully, as well as the ship in frame, would require more time and more study, as well as more space in your records than can be afforded. Your Committee will therefore allude only to some of the principal advantages claimed by the Timber Bending Company, namely:—

None but good sound timber will bear the great pressure to which the steamed wood is subjected.

The process of bending by steaming, and compression endwise, forces out of oak wood a good deal of deleterious matter which tends to cause rot.

Considerable room is saved in the ship by the mode of fastening the knees.

Your Committee can fully understand and indorse so much of the claims of the inventor. No entire ship has heretofore been built by this process, though the U. S. ship "Pawnee" and others had considerable bent timber in them, and Mr. Griffiths says they were very durable compared to some other Government vessels.

The new ship building at East Boston for Messrs. Glidden & Williams and others, is a very good specimen of ship-building. The timbers or frame are all in one piece from keel to gunwale; the beams, though light, are bent to their proper shape and quite near together; the keelsons heavy and well placed, the ceiling good and very well fitted, and your Committee are of opinion that she will be a very fine ship. They do not venture to give any opinion as to the cost of this ship, as compared to one built in the ordinary way, and they do not consider that it comes within their province to touch on this, the most important question involved in the process of bending timber.

While your Committee do not go into the financial question of bent timber, it is quite apparent that if every ship-builder could afford to set up the expensive machinery by which the timber is bent, and if they could be sure of always getting timber long enough and sound enough to bend without breaking, the carrying capacity and the durability of our ships would be materially increased.

722. **Lawrence Keiley**, *Boston*. Miniature Yacht "Commodore Follett." A full-rigged schooner yacht about six feet long, very sharp, and would be a fast craft on a large scale.

798. **Davis & Elwell**, *Gloucester*. Rubber Boat Fender and Boat. A flat boat or dory model, and India-rubber fenders. Fenders of rubber have long been in use, and to be effective on boats will be expensive.

Chains, Anchors, Chain-Stoppers, &c.

37. **J. Durell Greene**, *Cambridge*. Model Greene's Patent Anchor. This is a small galvanized-iron anchor, by General Greene of Cambridge. It has two movable flukes and no stock. When the anchor reaches the bottom, and a strain comes upon the shank, both flukes are expected to take hold at the same time. If this takes place readily, it has a considerable advantage over the ordinary anchor, where only one fluke, assisted by the stock, takes hold. Having no stock this anchor cannot foul like the old one. The inventor has furnished no evidence as to its holding power compared to other anchors of the same weight, but your Committee believe it has superior power, and will cost no more per pound than the common anchor. It was patented April 13, 1869.

85. **William D. Baker**, *East Abington*. Model of Chain-Stopper. A small model, not in working order.

673. **Charles Rook**, *Boston*. Four Trafton Patent Grapnels. The main features and novelty of these anchors consist in the arms or flukes being held to the shanks by clasps, keys, &c., so that a bent or broken arm can be replaced, if a spare one be on hand, without going to the blacksmith. There is no welding at the crown, and this may be an advantage, scarcely balanced by the increased cost.

761. Frederic Howes, *Boston.* Howes' Patent Grapnel Anchor. This Anchor has no stock, and resembles a common grapnel with four flukes or arms. These arms are so arranged as to be brought into line, one pair within the other, by revolving the inner pair on the shank. This renders it convenient for stowage, and at the same time it can readily be shipped for letting go. In taking the ground, two of the flukes *must* take hold, and in soft mud all the flukes will do some service. Your Committee have examined a large anchor weighing about 3,400 pounds, and notwithstanding the disadvantages connected with movable flukes, and some difficulty in stowing before unshipping the inner flukes, they are of opinion that it will hold on better than the ordinary anchor, and better than No. 37. Capt. Howes assures your Committee that the anchor has been tested at South Boston, but never in actual use on board ships. *Diploma.*

968. Fearing, Rodman & Swift, *Boston.* Chain-Cables and Crane-Chains. These specimens range from small chains for top-gallant gear, up to a cable of 2¼ inches. They are made at Providence.

143. W. F. Davis & Co., *Boston.* Model of Davis' Improved Centre-Board. Is a fold-up or fan Centre-Board; the object being to save room in the holds of cargo vessels and in the cabins of yachts, and also to provide a considerable portion of the ballast necessary when the vessel is light, and to tie the timbers together over the cavity. This Centre-Board was introduced to the notice of your Chairman about two and a half years ago. If made of iron it will not answer for coppered vessels, and if made of composition metal it will be too expensive for cargo vessels. Your Committee are of opinion that it will not come into general use in cargo vessels, because the small amount of room saved and the ballast afforded, will scarcely be set off by the loss of the centre-board box as a shifting-board, and the disadvantage in shoal vessels of having so much of the ballast very low down when they are loaded with heavy cargo. The question resolves itself into this: will it be useful in yachts, or on the Lakes where the corroding effect of salt water is not known? If expense is no object, and getting rid of the centre-board box in the cabin is vital, it will, if, as is claimed, it works more freely in all conditions of pressure than a common board, be a very nice thing for yachts, where ballast low down is a consideration. On the Lakes it will be more useful if it works well, than on salt water. In iron vessels navigating on fresh water, it will be most appropriate. Mr. Davis

informs the Committee that he has made in all fourteen centre-boards for yachts, and that the first one put in was for Commodore Follett's yacht Nettie, which has been in successful use three seasons, as attested by Mr. Follett. Of the fourteen, Mr. Davis says all but three have proved a complete success, and these failed, not from any defect in principle, but because the owners thought them too heavy for their small yachts. One, in the "Pilgrim," is said to have been removed because not hung right. None have been built for cargo vessels, owing to the general dullness in building. Mr. Davis says he has the endorsement of all the principal builders on the Lakes, and that he has just contracted to put one into a very large schooner. Mr. Davis presents drawings of his centre-board, and refers to a letter written by your Chairman in July, 1867, approving of the principle. The weight of the centre-board is less than the old centre-board box, which must be very strongly built in order to make up for the cutting off of the floor-timbers.

293. John Howe, Jr., *East Boston.* Model for Patent Keel or Centre-Board. This is a small model of a centre-board or folding-keel. It shuts up against the flat of the bottom, and can by proper means, not shown on the model, be adjusted so as to be held perpendicularly. This position gives it advantage over the ordinary centre-board, inasmuch as it requires less surface to accomplish the object, and less draft of water. It requires no cutting of timbers, and it will not occupy room inside the vessel, and it can also be readily applied or removed. It is open to the objections that it cannot be conveniently applied to any but very flat vessels. It will be liable to injury in dock or in taking the ground, or running over obstructions, when the ordinary board would close up; and finally, some of the objections made to No. 143 will apply to this in a greater degree.

Articles of General Utility.

161. L. Kempton, *Boston.* One Model Ship's Boom Buffer. A contrivance for easing the sudden shocks to which the boom sheets of vessels are subject in jibing, or in a heavy sea. This, or a similar machine, was exhibited in the last Fair, and received a Medal.

165. G. & E. H. Gifford, *Charlestown.* Whaling Tools. These are in great variety and appear to be well made, but your Committee, not being experts in this line, cannot speak of their excellence as compared to whaling tools in general.

166. W. H. Sprague, *Boston.* One Set of Signal Frames. This consists simply of rods, poles, or battens of wood, attached to signal flags, so that they can more easily be distinguished in calms, when the usual signals hang down, so that the colors are blended. This arrangement is simple, cheap and practical, and deserves a *Diploma.*

242. A. Judson Warren, *Boston.* Ships' Water Tank. A good article.

249. J. S. Johnson, *Boston.* One pair Spoon Oars. One pair Fancy Ash Oars. A very fine article, made of excellent stock.

861. Winsor & Bradlee, *Boston.* Three pairs of Oars. Very finely made and of excellent stock.

259. F. D. Chase, *Boston.* Ship's Ventilating Deck Iron. Two Deck Ventilators, one of brass, and the other of galvanized iron, designed to prevent heating or charring to the wood around galley funnels, or to act as a ventilator anywhere on deck. This is a useful article, especially for the stove funnels. *Diploma.*

314. Elisha T. Colburn, *Boston.* Model of Feathering Paddle-Wheel. Your Committee express the opinion, with some diffidence, that this model, if worthy of any commendation, should be judged of by engineers or machinists, but it is on too small a scale to enable any one to judge fairly of its merits.

291. Richard Robins & Co., *Boston.* The Nautilus or Life-Preserving Mattrass. This is a Life-Preserver Mattrass, by Gen. J. D. Greene, and consists of an ordinary berth mattrass, with cylinders filled with cork at the sides, and an aperture in the centre which can be closed at pleasure. This aperture has straps under it so that a person can sit on them and be supported head and shoulders out of water, and be somewhat protected in the most vital parts from contact with rocks or floating wreck. In one of your previous Fairs, a Poncho Mattrass for the same purpose was exhibited, which was better adapted to the purpose, but has never come into general use in this country. The present article is a valuable adjunct for saving life in the event of disaster to passenger vessels, and ought to be encouraged. We award a *Diploma.*

482. C. H. Dillaway, Jr., *East Boston.* One Solid Cork Life-Buoy. This is of circular form, similar in shape and principle to the well-known "Cartes" Life-Preserver; one of the best things of the kind in use.

745. F. H. Sumner, *Boston*. One Solid Cork Fender. A well-made, useful article, in common use.

295. Howard Perkins, *Mansfield*. Patent Fish Line Twister. A very complete and nicely working hand machine in operation, for twisting mackerel and other small line. *Diploma.*

403. American Net and Twine Co., *Boston*. Horse Nets and Fish Nets. These specimens are very creditable. *Diploma.*

318. Loring Moody, *Malden*. Improved method of operating Paddles for Vessels. Is a peculiar Paddle-Wheel Model. It takes the water like a duck's foot.

[In regard to this model, two members of the Committee have seen the paddle at work, propelling a common boat about 17 feet long, which, by gearing and the force of one man, not very strong, appeared to go about four miles an hour. The arrangement appears to be very ingenious and simple in its action, but it is impossible for your Committee to judge of its practicability on a large scale.]

364. Mayo & Tarr, *Boston*. Improved Bait Mills. *Diploma.*

913. John M. Todd, *Portland, Me.* Meat and Bait Cutter. This is a machine by Mr. J. H. Blake, of Maine, for chopping roots, meats and fish bait. The inventor claims that it will cut one hundred pounds of meat or a barrel of clams in twenty minutes.

401. Edward Shaw, *Chelsea*. Machine for cutting up Fish Bait. This is a smaller machine, on the same principle, for cutting bait. These machines will be found useful to fishermen or farmers, and would be a blessing to ships' cooks for making various sea messes. *Diploma.*

586. McIntyre & Gleason, *Boston*. Carved Figure-Head for Ship. A figure-head of an Indian, got up with a good deal of taste, and well executed. *Diploma.*

601. E. B. Vannevar & Co., *Boston*. Brass Side and Deck Lights. Four sizes, all excellent of their kind.

712. John P. Todd, *Boston*. Two Patent Blocks. Specimens of Blocks known as Waterman's Patent, long in use, and an excellent article.

964. C. G. Bachelders, *Camden, Me.* Ship's Chock. A small

rail chock, made of iron, lined with polished brass where the rope is to come. It is an elegant and useful article, deserving a *Diploma.*

983. JEWETT & LEACH, *Lynn.* Sheave for Block. This Sheave has a bearing composed of steel balls, and is an excellent article, worthy of a *Diploma.*

791. ROBERT B. FORBES, *Boston.* Canvas Drag. This is a model of a "Pudding-Bag Drag," introduced by the Chairman of your Committee. The mouth of this model is about a foot in diameter, and is kept open by a common hoop like a mast hoop. The bag is in length about three times the diameter of the hoop, and tapers to an obtuse point, like a sugar loaf. At the hoop there is a triangular bridle, to which the riding line is attached, and to the small end is attached a tripping line for reversing or spilling the drag and for hauling it on board, just as a bag log chip is hauled in. This drag, made of a size to suit the vessel, will be found cheap, effective in operation, easily put over and taken on board, and easily stowed in a small space. The hoop should be slightly weighted on one side, to allow it to sink below the crest of the waves. It is in use on the coast of England in life-boats and fishing vessels, and is a useful thing for retarding a boat under sail when running through surf, and it should be an appendage to every ship's boat. Your Chairman introduces it with considerable confidence, notwithstanding the suggestion by one of the Committee, that its holding power will only be equal to a solid block of wood of the same size and shape.

899. HENRY N. STONE, *Boston.* Edson's Patent Ships' Drag. Is a combination of wood and iron, by JACOB EDSON, intended for a "drag" or floating anchor, by which to keep a vessel's head more directly to the sea than can be done by sails, or to use when sails and spars are lost or cannot be set. This article is well made and expensive, but it lacks surface to accomplish the work, and would be inconvenient to haul on board.

934. SAMUEL CURTIS, *Lynn.* One Sea Anchor Drag. This is a combination of stout plank and iron, not folding up like Edson's, and of circular or mushroom form and is intended for the same purpose. It is so weighted as barely to float, weighing about one hundred and fifty pounds, and is said to be suitable for a vessel of about one hundred tons. It is intended to be hove up like an anchor to the bow. Captain Curtis says he has used one like it in

principle at sea, and found it to work well. The object of drags is a very good one, and every effort to introduce them should be encouraged.

898. **Jacob Edson**, *Boston*. Two Edson's Improved Ships' Ventilators. Two galvanized Ventilators, calculated to inject fresh air, or eject the air from the ship's hold or between decks. By removing a cap or cover to the mouth and putting it on the other, the action is changed as illustrated on a small box. They are good as far as they go in the useful line of ventilation, the main principles of which seem to be very little understood and practised on ships.

899. **Henry N. Stone**, *Boston*. One Improved Ships' Manhole Plate, one pair Ships' Main Pumps, one Ships' Force Pump, Windlass Beam, and Boom Buffers, all of Edson's patent.

The Manhole cover for decks, tanks, &c., combines all the requisites of a good manhole plate.

The pair of Ships' Pumps are adapted to work by brakes or by crank and fly-wheel, on which there is a new contrivance for shifting the fly-wheel.

The Ships' Force Pump, seen in operation, works freely by an upright shaft moved by hand, and appears to be an excellent article. It has a large vacuum and air-chamber, and can be operated by smaller hose than other pumps.

The Windlass Beam is well made, and has been exhibited before.

The Boom Buffers are similar in principle to No. 161, by Mr. Kempton, with some improvements for reducing the wear and tear to the sheet blocks. They are massive, and adapted to the largest schooners.

930. **Mark B. True**, *Newburyport*. Tree-Nail Machine. Makes tree-nails rapidly and well, and is fully equal to any in use. *Diploma.*

791. **Robert B. Forbes**, *Boston*. New Rig for Square-Rigged Vessels. A working model on a scale of ¾ inch to one foot, which, like all working models on a small scale, imperfectly made, does not do justice to the invention. Its main features are, that the topsails and topgallant-sails or upper topsails, are bent at the foot and not at the head, the courses come down to the deck to furl and reef, and the principal yards, as the lower topsail and topgallant yards are stationary, that is to say, they have no halliards, and only travel

up and down far enough to accommodate the sails as they stretch or take up. These yards are slung and parallel close to the masts, the lower yard to the lower mast just above the iron bands to which the rigging comes; the topsail yard to a prolongation of the lower mast above the lower cap, and the topgallant yard close above the eyes of the topgallant backstays and stay. The royal clews up and down much as usual. The topsails and topgallant-sails have "head spars" about one-fifth the length of their respective yards, which spars come up when the sails are triced up, within a foot, more or less, of the yard, and the stays lead out between the yard and this head spar.

The sails trice up at six different points by competent tackles, and their heads are guided down to the yards at their foot by jack-stays setting up between the yards, so that, by letting go the tricing tackles and hauling down on the several downhauls, the heads of the sails come down to the foot, and as the foot, the longest side, *is always fast*, the sails can be more easily furled or reefed than by the old process. The courses may be hauled up as usual in light winds and calms, or in coming to anchor; but at sea and in squally weather, they are intended to come on deck, or near to the deck. Besides the head spar on the courses, there is a spar on the foot in the centre of the sail, as long as convenient and not interfere with the swiftsure in bracing sharp, and similar to the spar in general use on English colliers and coasters.

The maintop-sail and mainsail will be *the only sails to reef* in this rig. To reef the topsail, the head must be clewed down to the lower yard, the reef band straightened out by handy tackles on the lower yard, the points tied round the head rope, and the sail swayed up as far as it will go; thus leaving a gap between the head and the topsail yard equal to the depth of the reef, plus the space necessary for the tricing blocks. The mainsail is reefed by stretching out a convenient portion of the head at a time on deck, tying the points, and swaying aloft when required.

It is claimed that the sails can be set and taken in more speedily and snugly than in the usual rig; the sails will set flatter; the reduction in cost will be considerable, by reason of having no ties, sheets or halliards, no tops, and much lighter masts above the lower masts. There will be less wear and tear to sails, spars and rigging, the yards will brace much sharper,—which is a great point in steamers going head to wind, with sails furled, and is also an advantage to sailing ships in tow, and when the topgallant-sails or upper topsails are furled.

In steamers, all backstays should set up by tackles. The topsails and topgallant-sails will be roped all round with one size of rope. These are the most prominent advantages claimed for the new rig. Like every thing new and untried, there will be some disadvantages. The most prominent (after the fact of the untried rig) is, that the lower mast must be longer than usual, but as the courses are shoal, this will not amount to more than six to eight feet in a ship of one thousand tons, and this extra length is balanced *in point of cost* by the absence of tops and topmast crosstrees, and by the lighter dimensions of the spar called topmast, but which is in reality the pole topgallant and royal mast.

It will be seen by the model that the only strain on the trussle trees comes from the bearing of the lower rigging and the pole mast; all else hangs on the lower mast.

The running ropes, although not more in number than in the old Forbes rig, and not so much in weight and cost, taking the chain sheets, ties and halliards into account, are more exposed to view, and appear more complicated.

It is also suggested that the courses will be more in the way on or near the deck, but as the foresail is a sail very seldom furled, and the mainsail one that gives much trouble to furl or reef, it does not appear to the inventor that the aggregate of labor and anxiety will be so great as in the old rig. Square sails in schooners, and studding sails in ships, and fore and aft sails in schooners, *have always come down to the decks!* why not courses? In many ships, the due accommodation of the mainsail will require a bridge deck, which may be long enough to stow the waist boats upon, and will be a good place for the lookout. Another very important consideration is, that the rig can be changed to the present Forbes rig, by simply fleeting the yards down, and fitting ties and sheets, and bending at the head, and fitting trusses to the lower yards.

If the general principle of the rig be found good in practice, all the little difficulties which occur to those who consider it for the first time will vanish. It is to be hoped that the importance of the subject, and the success which has attended the original introduction of the double topsail rig, now so universally known and used, will plead an excuse for writing so much about the new rig.

The other members of the Committee have examined the model of the new rig described above, and have listened with much interest to an explanation of the same by the inventor. They are of the opinion that the rig is worthy the attention of all persons interested in navigation, and although they are unable to judge of its entire practicability by seeing the model, they hope it may be fully tested upon a sea-going vessel, believing that any invention which claims in various ways to be an improvement over old and tried methods, should receive every reasonable encouragement, as well as a fair trial. OSBORN HOWES, SAM'L C. COBB, EDWIN BRIGGS, WM. MARBLE, JOSHUA BAKER.

BOSTON, September 27, 1869.

No. 8.

PHILOSOPHICAL APPARATUS.

JUDGES:

JOSEPH M. WIGHTMAN, CHARLES K. STEVENS,
DR. JOSIAH CURTIS.

17. IRA L. BENTON, *Hyde Park.* Pattern of Munson's Copper Tubular Lightning-Rod. This is made of sheet-copper in the form of a central cylinder with a spiral projection around it. As atmospheric electricity passes on the *surface* of the conductor, the principle of this Lightning-Rod is correct, but the pattern is too light, and it is not as easily put up nor any more efficient than others.

268. F. R. SMITH, *Boston.* Specimens of Lightning-Conductors, by the CLEVELAND LIGHTNING-ROD CO. There are two varieties of rods exhibited, both in the form of twisted wires, like a cable; one is of copper wire, the other of alternate iron and copper wires. The advantage of this form of rod is its continuity. The round rope of wires has no advantage over a simple rod of the same external surface, but as the cable form prevents the necessity of joints, it is so far preferable. Copper is a much better conductor than iron, and a rough conductor safer than a smooth one, because it diffuses the electric fluid as well as conducts it.

394. AMERICAN COMPOUND TELEGRAPH-WIRE CO., *New York.* American Compound Telegraph-Wire and Lightning-Rod. This Wire is composed of steel covered with copper, which, as a conductor, is far superior to iron or steel, the proportion of conducting power of copper being about as 7 to 1. For telegraph lines it combines the strength of steel with the conducting power of copper. It is an excellent article, carefully made, of great utility. Several

wires of this, twisted together and properly provided with points, forms one of the best protection rods for buildings. *Silver Medal.*

824. GEORGE W. OTIS & CO., *Lynn.* Otis' Patent Fluted Angular Copper Lightning-Rod. This Rod is also in the rope form, but instead of being made of common wire, is composed of a number of *triangular* copper wires twisted together. As a greater or less number of these may be twisted together, according to the extent of building to be protected, we regard the form and construction of this rod as superior to the others. *Bronze Medal.*

61. E. T. HOLMES & CO., *Boston.* Burglar Alarm Telegraph. This is a very ingenious application of electro-magnetism to the doors and windows of a house, by means of which, the opening of either by improper persons will cause a bell to ring in the chamber of the occupant, and also at once enable him to ascertain the particular room or part of the house from whence the alarm proceeds. *Bronze Medal.*

512. H. P. ROBINSON, *Boston.* Guest's Fire and Burglar Alarm Telegraph. This is similar in its general object and construction to the preceding. The Fire Alarm consists of a bulb of glass filled with quicksilver, and inserted in the walls and ceiling of the rooms, which, by its expansion from the heat, connects the wires and rings the alarm-bell. To give a reasonable degree of security, these mercury tubes must be very numerous in a house, located in every wall of every room, because a fire is extended more frequently through the firring of the walls than otherwise, and there is doubt whether such a contrivance could be relied upon.

926. E. H. RIPLEY, *Boston Highlands.* Letter-Carriers' Alarm. This consists of a metal plate, attached to the outside of a door, which on turning exposes a suitable aperture through which the letters may be dropped, and a bell rung at the same time by the movement of the plate. *Diploma.*

73. GEORGE B. MACOMBER, *New Bedford.* Webb's Adding Machine. This little apparatus is extremely simple in its construction, and accurate and reliable in its operation. It is unlimited in the addition of figures, and relieves the mind of the accountant from the weary strain of constant brain-work. It is a machine, and the whole operation of adding column after column of figures, two at a time, is purely mechanical, and the result is certain and correct. To accountants, engineers, and all others whose business

or profession involves the addition of figures, this Machine is an invaluable aid. *Silver Medal.*

82. AMERICAN MAGNESIUM CO., *Boston.* Magnesium Reflector Lamp, Smoke Condenser, Powder Lamp and Magic Lanterns. These are all contrivances for the convenient burning of magnesium to produce intense light.

375. O. B. BROWN, *Boston.* Phenocinopticon. For making movable pictures in the magic lantern.

155. GEORGE L. ROGERS, *Boston.* Electric Disks. These are composed of plates of copper and zinc, and are used for local electrical excitement.

230. MOSES G. FARMER and JOHN M. BATCHELDER, *Boston.* Telegraph Insulator. This is a very good specimen of an almost innumerable variety of contrivances for the purpose.

465. CHARLES WILLIAMS, JR., *Boston.* Telegraphic and Magnetic Instruments. These instruments are of good construction and excellent finish. *Bronze Medal.*

695. H. JULIUS SMITH, *Boston.* Electric Machine. The special object of this machine is to explode gunpowder and nitroglycerine in the process of blasting. It is very ingenious, and remarkably well adapted for this purpose. *Silver Medal.*

164. E. J. THOMPSON, *Lynn.* Macomber's Patent Gas Blowpipes. Useful for dentists, chemists, and gold and silver smiths. *Diploma.*

269. A. P. MELZAR, *Charlestown.* Improved Retort Stand, and Glass Percolators.

383. P. LEAR, *Medford.* Conical Ventilator. This is a contrivance for withdrawing or injecting air, and may be applied to buildings or vessels. As it only operates by being rapidly revolved upon its axis, it can only be used when the wind is sufficient to give it the required motion. Ventilation is needed most when the air is stagnant, and the wind not of sufficient force to produce motion in a machine of this kind. The present apparatus differs from the ordinary fan-blowers used in foundries, hospitals and public buildings, in being of a conical form, the peculiar advantages of

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which it would be impossible to ascertain without comparing it with all the various forms of revolving fan-blowers now in use, which the Committee have no opportunity of doing.

430. Joseph Watts, *Boston.* Measuring Instruments. These boxwood scales and measures exhibit good stock and workmanship. *Diploma.*

649. Gilman Joslin, *Boston.* Pair of 16-inch Globes. The Globes of this manufacturer have long been standard articles in this section, and have already received just commendation and awards at previous Exhibitions. The present size, 16-inch, has been recently added to the other sizes of globes, and these are equally as commendable as any that have been heretofore exhibited. *Diploma.*

712. F. W. Lincoln, Jr., & Co., *Boston.* Engineers' Instruments. These are manufactured for this firm by Gurley, of Troy, N. Y. They consist of Transits, Levelling Instruments, Circumferentors, and all the various instruments used in surveying. They are substantial in construction, correct in their division of degrees and adjustment, and of excellent workmanship. *Silver Medal.*

817. Cutter, Tower & Co., *Boston.* Magic Diamond. A cheap and useful substitute for the glazier's diamond for cutting glass. *Diploma.*

858. Charles A. Siefert, *Boston.* Barometers, Thermometers, Hydrometers and Illuminating Oil Testers. *Diploma.*

908. Charles Wilder, *Peterborough, N. H.* Woodruff's Barometers, and patterns of Thermometers. *Diploma.*

872. Joseph L. Bates, *Boston.* Stereoscopes and Pictures. For exhibition only. The Stereoscopes are of the form devised by Professor O. W. Holmes, but improved and introduced by Mr. Bates, who deserves great credit for providing the public with a well-made, simple and cheap optical instrument, and with its beautiful pictures, attractive and instructive to every family.

958. Alexander Beckers, *New York.* Large Stereoscope. A convenient and ingenious apparatus to exhibit stereoscopic pictures, either opaque or transparent. Mr. Beckers received a Silver Medal at a former Exhibition.

87. JOSEPH HOSKIN, *Waltham.* Watchmaker's Transit. This is a new instrument, just produced, and is designed to be used by watchmakers in obtaining correct time by the sun, at or near meridian. It seems well adapted for the purpose, gives great accuracy, and is nicely made. *Diploma.*

390. MOSES G. FARMER, *Boston.* Astatic Galvanometer. This is a new and greatly improved method of rendering the magnetic needle astatic. The usual method has heretofore been to use a steel magnet, suspended above or placed near the needle. Such magnet is constantly growing weaker, and thus varying the conditions essential to the needle's astaticism.

Mr. Farmer has devised the plan of passing a current through a large coil outside of, and at right angles with the small coils, which effects the purpose intended and less controlably done by the steel magnet. By this arrangement of Mr. Farmer, a definite current can be sent through a definite length of wire, thus rendering the magnetic field definite. The merits of this device are very decided and obvious. *Silver Medal.*

933. WILLIAM HUMANS, *Boston.* Improved Galvanometer for Delicate Electric Experiments. This is a small contrivance upon the general plan of galvanometers with watch movements attached, and is thought to possess value by the young man of ardent temperament who devised and exhibits it.

111. EPHRAIM CUTTER, M. D., *Woburn.* A Portable Microscope for Clinical and Educational Uses. This instrument, first suggested for the clinical use of medical men by the fertile mind of Dr. Cutter, is quite portable, and seems well adapted for travellers, naturalists and physicians. It is modified, improved and made by the Boston Optical Works, and is compact, and may be carried in the pocket.

297 and 460. BOSTON OPTICAL WORKS, *Boston.* Robert B. Tolles, Superintendent, Charles Stodder, Treasurer. Microscopes and Telescopes. The Microscopes exhibited comprise a variety of instruments and accessories, embracing much that is original and ingenious, and characterized by nice workmanship and elegance in appearance.

One large Microscope with A and B Huyghens' eye-pieces, and Tolles' patent solid C eye-piece, with micrometer, has a very ingeniously constructed rotary stage, devised by Mr. Tolles, which is only one-sixteenth of an inch thick. Its rotary movement is concentric with the axis of the objective. It has also lateral movements by friction rollers, and a substage, movable by rack and pinion, for accessory apparatus.

There are several other instruments intended for students, which are much less elaborate. These are supplied with a one-inch and a one-fourth inch objectives, both of second quality, and have coarse and fine adjustments, and also the means for applying accessories. We should also here mention a pocket achromatic triplet.

In the list exhibited we find a binocular eye-piece, and a solid eye-piece, both invented by Mr. Tolles, and although the latter was patented in this country by him several years ago, we were shown a similar device, in fact nearly identical in every essential particular, by a scientific friend, who has just returned from a sojourn in Europe, where he purchased it as a new and valuable *oculaire*, one of the latest improvements just invented by a microscope maker of celebrity in Paris.

Among the instruments on exhibition, we find first-class objectives, as follows: a one-inch, having an angle of aperture of 27°; a half-inch, with 60° angle of aperture; a one-fourth, with 70° angle of aperture, and constructed with a Tolles' illuminator for opaque objects; a one-sixth immersion, with 150° angle of aperture; and a one-tenth immersion, having an angular aperture of 175°.

It is mainly to improved object-pieces or objectives, as they are more frequently termed, that the world is indebted for the means of extending the limits of our knowledge through the revelations of this valuable instrument. Since the middle of the present century, improvements have been made, and a degree of perfection approximated in the construction of microscopic objectives, which twenty years ago were pronounced by the best authorities as utterly unattainable.

Messrs. Powell and Lealand, Smith and Beck, and Ross, and others of England; and Nachet and Hartnack and others of France, besides many very reputable makers in Continental Europe, have honorably vied with each other in advancing improvements upon the higher order of objectives. But while such eminent practical skill has endeavored to meet the wants of scientific men abroad, in pushing their research beyond that of their predecessors, there has been no less demand by restive intellects in this country for the very best instruments, and no less intelligence and skill in successful efforts to meet such demand. Among those practical photonomers who have been the most successful, whether at home or abroad, in the scientific construction of the highest order of optical instruments, the samples on exhibition from the Boston Optical Works well warrant the assertion that their superintendent has advanced to the foremost rank.

In microscopic objectives it is obvious that the extent of amplification, and the character of the light as well as the kind and degree of illumination, are more or less common to all makers. Other things being equal, the relative as well as the absolute merits of objectives are commensurate with their degree of distinctness of delineation or definition. This quality must not merely cover the outline of infinitesimal objects, so to speak, but extend to the minute details of their structure and coloring. The higher powers of course, more largely magnify any and all defects or imperfections due to their own imperfect construction; hence the true merits of objectives are in favor of those of the lower powers, which under like circumstances give equal distinctness in definition or resolution.

The obstacles to perfection in this direction were various, numerous and enormous, so much so that those savans most familiar with them were generally the most decided in pronouncing them all but insurmountable. But for the high degree of perfection in our present make of instruments, as well as our hopes for still better ones, we are largely indebted to practical opticians, whose perseverance in their study of the laws of light and the principles which prevail affecting the same; in the material of which the lenses are made, as well as mathematical precision in giving them form, relationship and combination, was coupled with long series of laborious, but patient trials, studded with discouraging failures, while on their tedious way to eventual success.

The judges took as much pains as circumstances permitted, to compare the workings of the instruments on exhibition, with others of the most reputable makers in this country and Europe. The objective of the highest power, was the one-tenth immersion, whose angle of aperture is 175°. Under the observation of the judges and others whose assistance was invited, this objective defined test objects better than any objective of the same power, and as well as many others of higher powers, from other makers, which were at their command. The usual tests were resorted to, such as the *Pleurosigma angulatum*, *Surirella gemma*, &c., &c., among the Diatomaceæ, and Nobert's test-plate from artificial sources. The latter is *par excellence* the test of the quality of objectives. It consists of straight lines uniformly ruled on glass, and is not subject to the variations which prevail in different individual specimens of the same species, among natural objects. The test-plate used, was one of Nobert's later make, containing nineteen bands, the last of which, or the nineteenth band, was composed of lines so fine and close that it requires over 112,000 to occupy the space of one inch. These were clearly resolved by direct* light illumination from a kerosene lamp, with the one-tenth immersion objective and a B eye-piece. Among those invited who witnessed this performance, may be named Prof. Wolcott Gibbs and Dr. B. A. Gould of Cambridge. The true lines of this nineteenth band have never yet been seen by Nobert himself, and their resolution has been pronounced both by him and many European microscopists of eminence, as physically impossible. We cannot learn that any one in Europe claims to have seen them, if we except, perhaps, Nachet of Paris. At the U. S. Army Medical Museum in Washington, D. C., with a one-sixteenth immersion objective, made by Powell & Lealand of London, the sunlight being controlled by a heliostat and rendered monochromatic, excluding all rays of the spectrum except those of the shorter wave-length, and condensed with a one-sixth objective of Tolles' make, the lines in question have been photographed.

The one-inch objective on exhibition, is constructed for use in water, and seems admirably adapted for tank work where minute dissections are to be performed. The prism arrangement of the one-fourth objective for illuminating opaque objects through its anterior combination lens, is new and worthy of special consideration. It is simple, its use employed or readily cut off, and is free from the glare and other objections which have rendered nearly useless all former efforts to improve the illumination of opaque objects under high powers.

The Binocular eye-piece is also the invention of Mr. Tolles. It not only seems to do well what any other form of binocular microscope will do, but is also suitable for use in those cases where all other binoculars fail—their uses being limited to the lower powers in consequence of the relationship of their binocular arrangement to the objective. Mr. Tolles' arrangement connects it with and makes it a part of the eye-piece. It may also be used with telescopes.

The Telescopes on exhibition by the Boston Optical Works, comprise one Improved Equatorial Telescope having five inches aperture and thirty-five inches focal length, with two eye-pieces having powers of 80 and 160 respectively; and two smaller improved short-focus telescopes. Of the latter, the lens or object-glass of one is one inch in diameter, and has a focal length of four inches. The extreme length of the instrument is twelve inches. It has a pancratic eye-piece, varying the power at will, and is reported to have borne one hundred diameters with full satisfaction. The other has one and a half (1·45) inches aperture, and six inches focus.

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* Direct light should not be confounded with central light. The light was direct from the lamp, unmodified; of course it was very oblique.

It will be at once observed that the shortness of focal lengths for such apertures, is novel if not unique. It is believed to be without a parallel in instruments from any other maker. In a very large class of uses, this quality gives them especial value. The superiority of this form over those of ordinary construction, particularly in the largest instrument exhibited, is reported to have been very manifest by the side of telescopes of other makers, in observations during the great eclipse of August 7, 1869.* By rendering the use of eye-pieces of lower power admissible, and especially in the great augmentation in the field with distinct vision, this form of telescope will quite easily accomplish what is absolutely impossible with those of the same size constructed upon the usual formulæ. Besides such signal service, their portability and facility of manipulation should be mentioned.

In conclusion, it should be stated that none of the articles above noticed were made for exhibition, but faithfully represent such as are put into the market. Indeed, nearly all of them had been sold and were loaned by their owners for this occasion. It may also be added that the opinions of the owners as well as others eminently capable of judging correctly and impartially, emphatically justify the conclusion of the judges in deeming the articles from the Boston Optical Works worthy of the highest award, a

Gold Medal.

[NOTE. After the foregoing report was completed, the official Report of the U. S. Commissioners to the Paris Universal Exposition, 1867, as published by the Department of State at Washington, D. C., was received. In the volume on "Machinery and Processes of the Industrial Arts, and Apparatus of the Exact Sciences, by Frederick A. P. Barnard, LL.D., U. S. Commissioner," may be found, on pages 534 *et seq.*, the following remarks referring to "Mr. Robert B. Tolles, the Superintendent of the Boston Optical Works, whose objectives are unsurpassed in excellence by any in the world. Mr. William Wales of Fort Lee, near New

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* Special search was made for intra-Mercurial planets by Prof. Newcomb at Des Moines, according to the plan suggested by him in the April No. of this (Silliman's) Journal, with two six-inch object-glasses, having a field of about one-third of one degree each, and previously clamped to the desired position. A similar scrutiny of the ecliptic near the sun was made by Dr. Gould at Burlington in connection with Prof. Coffin's party, using a Tolles' telescope of five inches aperture and a field of nearly two degrees provided with occulting discs at the focus.—*Silliman's Journal*, Sept., 1869, p. 288.

York, contests closely with Mr. Tolles the palm of superiority; and between these two accomplished constructors, the microscopic world has not been able to pronounce a decision more favorable to one than to the other. * * * It is not necessary for Americans any longer to go abroad in order to obtain microscopic glasses of any description of the highest order of excellence. The objectives of Messrs. Tolles and Wales, whether constructed for working wet or dry, will stand the severest comparison with those of the most successful constructors of England or France." In objectives of the lower powers, Mr. Tolles finds an honorable rival and close competitor in Mr. Wales; in objectives of the higher powers, Mr. Tolles appears to be preëminent.

No. 9.

SURGICAL INSTRUMENTS AND DENTISTRY.

JUDGES:

Dr. Samuel Cabot,
Dr. George Derby,
Dr. Samuel A. Green,
Dr. D. McB. Thaxter,
Dr. Elbridge G. Leach.

The judges appointed to examine and report upon such Surgical and Dental Instruments and appliances as are on exhibition at the Charitable Mechanics' Fair, having carefully inspected all such instruments, &c., would respectfully report, that they find their number and importance to fall far short of that shown at previous Exhibitions held under the auspices of the Association, and that consequently their report will be very meagre.

14. H. Fairbanks & Co., *Boston.* Fountain Syringes. This instrument has some points of value, especially as a nasal douche, and for the irrigation of sores and wounds, and your Committee would recommend the award of a *Diploma.*

762. L. C. Dale, *Boston.* Dale's Fountain, and Elastic Syringes.

763. Thomas Lewis, *Boston.* Lewis's Extension, and Eye and Ear Syringes.

978. John Haskins, *Boston.* Perforated India-Rubber Goods.

18. Salem Leg Company, *Salem.* Models of Artificial Legs. Your Committee found some points in which this instrument *ap-*

peared to be an improvement upon other forms, and would therefore recommend the award of a *Diploma.*

979. GEORGE B. FOSTER, *Boston.* Jewett's Artificial Legs. A very good article. We recommend a *Diploma.*

343. J. WHITTEMORE, *Wakefield.* Crutches and Sockets. The mode of renewing the rubber pad in the socket at the end of the crutch is excellent, and your Committee would recommend that the inventor should receive a *Diploma.*

146. CODMAN & SHURTLEFF, *Boston.* Surgical Instruments; Atomizing Apparatus, &c. These contributors show a case of very well made and highly finished Surgical Instruments, and also a very neat, portable and strong Steam Atomizer. Also a very neat Atomizing Douche for eustachian tube. Also a very safe, compact and complete apparatus for the manufacture and use of the Nitrous Oxide Gas, and a valuable and ingenious Saliva Pump. For these valuable contributions to the means of healing, your Committee would recommend that Messrs. Codman & Shurtleff should receive a *Silver Medal.*

906. INCREASE S. HILL, *East Boston.* Improved Pump for the Œsophagus. Your Committee failed to discover in what this instrument was an improvement upon those now in use.

2116. MRS. L. W. TUCK, *South Weymouth.* Ladies' Abdominal Supporters. This appears to be a good thing, though without any very just title to the claims put forth by its inventor, so-called. The principle is not new, and the method but little more so.

2379. DR. NORMAN WILSON, *Chelsea.* Corslets. This is nothing but the use of the old plicated spring to stiffen corsets for the treatment of diseased spine. The form of spring is the only element of especial value about it, and that is, and has long been, in common use by surgeons for the treatment of that class of diseases.

2476. WILLIAM HEATH, *Bath, Me.* Hospital Bedstead. This bedstead has some excellent points about it, especially the mode of using and adjusting the bed-pan, and the smoothness and ease with which the form is changed; but as a bed to be used for surgical purposes it lacks one very important feature, viz., the means of forming a double-inclined plane for the leg. A large proportion of cases requiring the use of a bed of this kind are cases of fracture of the neck of the thigh-bone, and for the treatment of a large proportion of these, it is quite important to have it in one's power to use the double-incline. The same may be said of some other fractures of the thigh, &c. Your Committee were, however, so favorably impressed with the valuable parts of the instrument, that they would recommend the award of a *Bronze Medal.*

2509. PETER LEAR, *Medford.* Lungs Protector. Your Committee fail to discover any especial value or merit in this appliance.

No. 10.

BOOTS, SHOES AND LEATHER.

JUDGES:

THEDORE H. BELL, JAMES A. WOOLSON,
JOHN O. POOR, CHARLES F. PARKER,
GEORGE A. GUILD.

The Committee on Boots, Shoes and Leather have carefully examined all the articles on their list.

They take great pleasure in stating that most of the articles they were called upon to examine have never been surpassed for beauty of finish, superiority of style, admirableness of fitting, and excellence of workmanship.

In no department of manufactures has there been so great an advance towards perfection as in that of boots and shoes.

The leather they were called upon to examine, though meagre enough in quantity, received their highest commendation as to its excellence of finish and superiority of quality.

BOOTS AND SHOES.

209. C. BENKERT & SON, *Philadelphia, Pa.* One case of Gents' Boots and Shoes. Very fine fitting goods, of excellent stock, and good work. Worthy of commendation. We award a *Bronze Medal.*

324. WILLIAM LEATHE & CO., *Woburn.* The "Perfect Fitting Boot." The combination of lacing, buttons, congress sides, must make the boot fit well about the ankle and leg; but, in the minds of the Committee, too much labor and time required in putting them on and off to be of general use; still it is worthy of notice. We award a *Diploma.*

414. Theo. H. Bell, *Boston.* One case of Gents' and Ladies' Boots and Shoes. Not for competition.

535. A. Ferguson & Son, *Boston.* One case of Boots and Shoes. The goods of Messrs. Ferguson were very excellent articles, and worthy of favorable mention. *Diploma.*

576. George F. Sanger, *Lynn.* Ladies' Serge Congress Boots. Very fine fitting, well made goods, worthy of commendation. We award a *Diploma.*

582. John F. Pray & Son, *Boston.* One case Gents' Custom Boots and Shoes. Very fine fitting goods, excellent stock, and very superior workmanship. We award a *Silver Medal.*

605. Nathaniel Bodwell & Co., *Boston.* One case of Ladies' Boots and Slippers. Very superior work, excellent fitting, and for beauty of style and finish, not surpassed by anything seen by the Committee. They award a *Silver Medal.*

658. W. W. S. Orbeton, *Haverhill.* One case of Ladies' Balmoral Boots. Without heel or vamp seams.

691. John F. Foss & Co., *Boston.* One case of Boot and Shoe Uppers, and four pairs Russia Boot Legs. For exhibition only.

720. G. Lamkin, *Boston.* One case of Boots and Shoes. Fine quality of stock, well finished, and well fitted goods. The Committee award a *Diploma.*

757. John O. Atwood, *New York.* One case of Duchess Boots.

857. Bullivant Shoe and Last Co., *Boston.* One case of Boots and Shoes. It gives ease to the foot, and saves the expense of any tip to protect the upper leather. This invention merits consideration. We should judge it would be valuable for youth of both sexes, and for men, where boots and shoes come to a pretty good test. We award a *Bronze Medal.*

Over Gaiters, Leggins, &c., &c.

321. F. B. Wallis, *Boston.* Gents' Over Gaiters and Child's Leggins. These goods are worthy of the highest commendation

for superiority of work, beauty of finish and excellence of fitting. They excel the imported articles, which were at one time the only article of the kind used in this market. We award a *Silver Medal.*

2351. F. M. BLODGETT & Co., *Boston.* One case Leggins and Over Gaiters.

239. J. PAYSON BRADLEY and EDWARD E. ALLEN, *Boston.* Patent Boot and Shoe Guard for Coasting. This is a very good invention. When applied to boot or shoe, effectually protects the toe and side of the boot or shoe from the wear and tear in steering the sled while coasting. We award a *Diploma.*

372. JOHNSON & SIBLEY, *Auburndale.* Inner Soles, made of Horse Hair. Very good article.

459. BOSTON SHOE STUD AND BUTTON Co., *Boston.* Patent Shoe Stud. Very excellent mode for fastening boots or shoes. We award a *Diploma.*

679. WOODMAN & Co., *Boston.* Samples of Shoe Buckles. Very good articles.

781. ALBERT A. POPE & Co., *Boston.* One case of Rosettes and Bows. Very fine and well made articles. We award a *Diploma.*

782. CHARLES H. YOUNG, *Boston.* Case of Rosettes, Hooks and Lacings. Very good articles.

803. D. E. EATON, *Boston.* Two Shoe Horns,—one Cast-Iron, one German Silver. Very good articles.

2467. A. O. CRANE, *Boston.* Patent Rotary Boot Heel. A very useful, economical article, worthy of notice. *Diploma.*

LEATHER.

95. F. S. MERRITT, *Boston.* Buff Leather. Curried Split Leather. Excellent article. Grain Patent Leather. This leather maintains its superiority, for which the manufacturer was awarded a Silver Medal at the last Exhibition. The judges would have given him one now if they felt they had a right to do so. Cuir Leather. Imitation Goat Skins. Imitation Glove Leather. Imitation Bronze

Leather. The manufacturer deserves great credit for the success which has attended his efforts in making so excellent imitations. On these we award a *Bronze Medal.*

110. Reitenbach Brothers & Mink, *Boston.* Calf Skins. Very good and very well finished stock. We award a *Diploma.*

435. J. A. & N. Harwood, *Boston.* Leather Board. The only specimen of this article in the Fair,—would it were the only specimen in the world! Very good of its kind; but a very poor kind. This article is used largely in the manufacture of boots and shoes, to *cheapen* them. Dealers at the South and West demand a low-priced boot and shoe, requiring this article to be used for inner soles, stiffenings for heels, heel lifts, and even for the first sole of a double-sole boot or shoe. They are sold to the consumer for a good article, not a word being said as to the component parts of the boot or shoe. The wearer finds on the first rainy day that his boot or shoe has melted under his feet, like wax before the sun. All New England suffers in its reputation as a "Yankee cheat," when the fault lies directly with the dealer. Let every manufacturer frown down the use of this abominable article. Let every consumer, East and West, North and South, inquire of the dealer how much leather board is used in making up the boot and shoe they wish to purchase, and by a combined effort of manufacturer and consumer, this article will be driven out of use.

774. Jonathan Pierce, *Boston.* One Calf Skin. Two Sheep Skins, and one side Kid Leather. Patent Stuffing.

787. Bucknam, Rayner & Co., *Boston.* Five rolls of fine curried Split Leather, curried by H. B. Farwell & Co. This stock receives the highest commendation of the Committee for the fineness of its quality, beauty of finish and superiority of workmanship. We award a *Silver Medal.*

953. Hardhack Tanning Association, *Boston.* Cape de Verde Goat Skins, tanned entirely with hardhack, by Charles Packer, of Boston.

954. William Muller, *North Cambridge.* Calf Skins and Hair Calf Skins. Very soft and fine finished stock. Superior tanning and workmanship. We award a *Silver Medal.*

No. 11.

CARRIAGES, HARNESSES, HOSE AND TRUNKS.

JUDGES:

Alexander McDonald,	John S. Dammell,
Moses Colman,	Alsom Garcelon.

The Committee on Carriages, Harnesses, Hose, Trunks, &c., deem it their duty to say to the Government of the Massachusetts Charitable Mechanics Association, that owing to the very short time intervening between their organization and the close of the Fair, (two members being absent,) that they were unable to comply with the wish of many contributors who desired an opportunity to explain the merits of their contributions. But they pledge to every contributor a full and fair examination of all the articles within their department, and a faithful report of the same to the managers.

Your Committee regret to find that rivalry or competition was chiefly confined to two branches of industry, viz., Carriages and Trunks—there being nine contributors of carriages and six of trunks.

Your Committee have examined these, together with the various other articles, and submit the following Report:—

236. James Hall & Sons, *Boston.* Light Shifting Top Buggy. An excellent carriage, worthy of the reputation of the maker.

263. Francis Sargent & Co., *Boston.* Extension-Top Carryall, Roll Top Buggy, Plain-Top Sheridan Buggy.

The Extension-Top Carryall is a very convenient family carriage.

The Plain-Top Sheridan is a good comfortable carriage.

The Roll-up Top Buggy is a good fair article.

419. John A. Scott, *Boston.* One Open Beach Wagon. A strong, durable carriage.

497. Chauncey Thomas, *Boston.* C Spring Barouche and Physician's Buggy. The Physician's Buggy is particularly noticeable for its comfort and durability. It has improvements over all other carriages here, and is really worthy of more than passing

notice. Your Committee pronounce it the best, and recommend for the improvements a *Gold Medal.*

The C Spring Barouche has general excellency of workmanship, and is remarkable for comfort and beautiful design. We recommend for superior materials and workmanship a *Diploma.*

598. Kimball Brothers, *Boston.* Six-Seat Clarence Rockaway, Four-Spring Cut-under Buggy, Light-Top Box Buggy, Corrugated Single Sleigh, Gentlemen's Trotting Sleigh, Top Dog-Cart.

The Clarence Rockaway. A very excellent carriage, beautifully trimmed, iron work smooth. Some excellent improvements have been made in the construction of this carriage that the contributors claim as their own. We recommend a *Silver Medal.*

Light-Top Box Buggy. A good serviceable article. Corrugated Sleigh. A new pattern. Very superior. Trotting Sleigh. Plush lined, shifting cushions, very good. Top Dog-Cart. More attention paid to strength than elegance.

880. William P. Sargent & Co., *Boston.* Clarence Coach, one Landau, Goddard Pattern Top-Buggy, three Single Sleighs. A fine display of carriages, particularly the Clarence Coach and Landau. They are very stylish, elegantly finished and of the latest French patterns. The Goddard Pattern Top-Buggy will do good service. For this elegant display of carriages the Committee recommend a *Silver Medal.*

389. George W. Marsh, *Chelsea.* One Child's Carriage, valued at one hundred dollars; hung on leather braces. A very neat and useful carriage for invalid children.

797. Colby Brothers, *Waterbury, Vt.* Two Children's Carriages, three Sleds, one Boy's Velocipede. Carriages very nice and richly trimmed. Sleds and Velocipede, very good articles.

2435. S. H. Kimball, *Boston.* Children's Carriages, three Perambulators, one Open Buggy, one Child's Buggy, one Shifting-Top Buggy. The largest variety and best display.

21. George B. Jewett, *Salem.* Three-Wheeled Velocipede. A very neat and pretty article.

148. C. F. Jenkins, *Boston.* Three-Wheeled Velocipede. A very ingenious arrangement.

267. Bridgman & Peabody, *Boston.* Five Sleds. Very nicely made, and good running models.

478. Charles I. Craibe, Jr., for John Monk, *South Boston.* Patent Wheel and Hub. A good article.

510. John G. Buzzell, *Lynn.* Elastic Wire Carriage Wheel, Velocipede Wheel, Child's Carriage or Truck Wheel. These wheels are very neat and pretty, but of doubtful utility.

827. John Raddin, *Lynn.* One Car Wheel, Engine Wheel and Carriage Wheel. All that the contributor claims for the engine wheel is substantiated by Chief Damrell of the Boston Fire Department. We recommend a *Silver Medal.*

The Carriage Wheel is an ingenious invention, but more suitable for a trotting course.

842. Walter K. Foster, *Cambridgeport.* Two Patent Carriage Wheels with Patent Couplings, and Patent Concord Tire, Patent Screw Taps and Carriage Washer. A combination of patents of which the Committee have no means of testing the merits.

925. Foster & Howe, *West Amesbury.* One Set Light Buggy Wheels. A very excellent set of wheels.

392. American Sleigh and Carriage Iron Co., *Boston.* Sleigh and Carriage Irons. Well finished. Box Scrapers with shifting blades. Very good.

564. S. R. Bailey, *Bath, Me.* Sleigh and Sleigh Bottom with Patent Trap Floor. An improvement on the old style trotting sleigh. The scraping standard is very good.

588. John P. Whittier, *Boston.* Barouche Sleigh, Light Shell Sleigh. Barouche Sleigh, an extensive vehicle. Light Shell Sleigh, very neatly trimmed.

137. D. Arthur Brown & Co., *Fisherville, N. H.* Box of Concord Axles, all sizes. Good specimens of workmanship.

964. C. G. Bachelders, *Camden, Me.* Self-Oiling Axle. Certainly a good piece of workmanship.

190. G. R. Wordell & Co., *Fall River.* Two Carriage Jacks. Very cheap, simple and effective.

511. Francis B. Lavy, *Boston.* Small's Patent Carriage Jack. Very good. Its simplicity recommends it.

91. A. Richardson, *Boston.* Continuous Corked Steel Horseshoes. Of questionable utility.

102. H. H. Knight, *Charlton.* Five Whip Stocks. Smooth, well-finished stocks.

294. J. Henry Herman, *Boston.* Model of Horse Car on Improved Street Rails. In the construction of new roads this idea is worthy of consideration.

298. William H. Reed, *Boston.* Dog Muzzle. Very good.

327. Charles L. Wheeler, *Boston.* Portable Anti-Snowball Pad. An excellent article and a very useful invention. Committee award a *Silver Medal.*

352. Alfred Hale & Co., *Boston.* Rubber Covered Driving Bits. A good display of bits, worthy of public attention and a *Diploma.*

359. Thomas E. N. White, *New Bedford.* Rowing Carriage. A novel idea.

386. Charles F. Harlow, *Boston.* Patent Horse Clipper. A very ingenious arrangement.

709. New England Car Spring Co., *Boston.* India-Rubber Car Springs for Railroads and Horse Cars. Very good articles.

804. Levi Shaw, *Rockport.* Fire Escape Ladder and Scuttle Combined. A very useful article.

1005. Augur & Burnap, *Poughkeepsie, N. Y.* Patent Steel Buggy Gearing Side-Spring. Patent Elliptic Buggy Steel Gearing. The Side-Spring is certainly a very easy-riding gearing and worthy of more than mere notice. Evidently the maker in this particular case is in advance of former production, and we award a *Silver Medal.*

116. Ezra Wilder, *South Hingham.* Three Patent Adjustable Horse-Collars and Hames attached. One Adjustable Saddle. Committee think these articles are too complicated and of doubtful utility

241. Hugh Quinn, *Charlestown.* Elastic Trace Connection. A very neat and pretty article.

274. William Holmes, *Boston.* One Side-Saddle, and one Gents' Shaft-Saddle. An excellent show. These articles are deserving of the highest commendation and a *Diploma.*

385. American Horse Collar Co., *Boston.* Ten Horse Collars. One Cart Saddle. An extensive display.

422. S. G. Cheever & Co., *Boston.* Colburn & Belcher's Patent Harness-Coupling. A very convenient harness for a light carriage. Committee recommend a *Bronze Medal.*

625. Charles B. Hogg, *Boston.* Patent Bridle, Bit and Halter. Of questionable utility.

748. William H. Bustin, *Boston.* Express-Hames, Team-Collar. The Hames have three important improvements, viz.: Lip, Protector and Flange, combining safety and durability. The Lip or lower part of the Hames is as wide at the throat as at the sides, and fits as closely into the groove of the collar, thereby rendering the Hames almost inseparable from the collar. The Protector is a flat metallic plate attached to the Hames, to prevent the hame-tug from pressing or wearing the collar. The Flange is an angular metallic cap applied to the side and edge of the Hame, adding firmness and strength. The improvements are invaluable for hackney coach and heavy team harnesses. The Committee recommend a *Silver Medal.*

795. John Holt, *Boston.* Saddlery Hardware. A very rich display of plated ware, very elaborately finished.

879. James Boyd & Sons, *Boston.* One Case Light Buggy Harness. One Case Light Double-Harness. Heavy Cart Harness and Express Harness. Your Committee pronounce the Light Harnesses superb, and the Heavy Harnesses very superior articles, worthy of the reputation of Boyd & Sons. We recommend a *Diploma.*

807. M. W. Chadbourne, *Boston.* Eight Cans Eureka Neatsfoot Oil Harness-Blacking. For this we award a *Silver Medal.*

114. F. W. Claessens, *Boston.* Two Sections Linen Engine-Hose. Good stock, warp and filling. A very good article of the kind.

750. John Clark, *Boston.* Clark's Linen Engine-Hose. Patent Ring Screw-Coupling. Improved Hose-Pipe. Improved Crotch. A Diploma was awarded for Hose at the last Exhibition. Screw-Coupling. A very excellent article.

816. S. G. Cheever & Co., *Boston.* One piece Leading Hose; Elastic Pipe; Two Express Collars; One Team Collar; One Patent LeKay Collar; Two Leather Trunks; Military Equipments; Fancy Shopping and Worsted Bags. The Hose stock is well selected and of good workmanship. The Leather Trunks are good, fair articles. Military Goods and Fancy Bags, a fine display. This contribution is praiseworthy.

790. D. Morrison, *Leroy, N. Y.* Single Discharging Hose Nozzle and Pipe. A very ingenious invention, and worthy a *Diploma.*

955. F. S. Babbitt, *Taunton.* Hose Pipe. A very useful article.

957. L. W. Reed, *East Cambridge.* Hose and Pipe Coupling. Practicability doubtful.

139. Easter & Winship, *Boston.* Two Leather Trunks; One Leather Valise; Three Wood-Frame Trunks; Worsted and Morocco Bags. The Leather Centre Trunk claims our admiration. The stock is good, the workmanship, externally and internally, strong and neat. This Trunk is made by a workman of thirty-five years' experience at the bench. For superior workmanship the Committee award a *Bronze Medal.*

Two Wood-Frame Trunks. One of these is admirably arranged for ladies' use, having a greater depth of cover, or top, to accommodate an apartment suitable for a lady's bonnet. This idea is secured to the contributors by letters-patent. The internal finish is very nice. The Leather Valise is a good, serviceable article. Fancy and Worsted Bags. Neatly made.

382. R. Horton & Sons, *East Somerville.* Patent Eugenie Trunks. This Trunk is covered with a thin wood veneer, similar

to the article recently got up to take the place of wall paper, called Wood-Hangings. In the opinion of your Committee, it is rather a delicate material for this purpose.

520. JONATHAN S. EATON, *Boston.* Two Patent Excelsior Trunks. The contributor of these Trunks is the patentee. The opinion of your Committee, as to durability, is fully set forth in contribution No. 620. Much praise is due to this contributor for the arrangement of the foreign wood cleats; and the general appearance of these Trunks is beautiful and elegant.

620. S. JACKSON, JR., *Boston Highlands.* Two Patent Excelsior Trunks. The contributor claims, by the peculiar application of wood cleats to the outside of these Trunks, instead of the usual leather covering, to have produced an improved traveling trunk. We see no reason why a good, durable article may not be made in this way, if the cleats used are of a proper thickness and firmly secured. There is every indication of strength and durability in these trunks.

751. RICH, PITMAN & CO., *Boston.* One Leather Trunk; Two Leather Valises; Two Wood-Frame Trunks; Ladies' and Gents' Traveling Bags. The Leather Trunk is smooth and neatly made. Stock rather ordinary. The Wood-Frame Trunks are good articles, of good stock, and nicely finished internally. Good mechanical skill displayed. The Valises are well made and of good stock. The Traveling Bags are good, serviceable articles.

No. 12.

HOUSEHOLD ARTICLES.

JUDGES:

NATHANIEL C. STEARNS, STEPHEN SIBLEY,
RICHARD BRIGGS.

The exhibition of articles in this class is not so extensive as at the Fair of 1865, but are mostly of utility; although we must say that in some cases an unnecessary amount of inventive genius and expense is employed for the result to be obtained.

In several cases the articles presented are improvements or alterations upon others which received premiums at previous Exhibitions, and from which the idea was evidently derived. We have therefore noticed the improvements only.

The Committee, after a careful examination of each article intrusted to them, propose the following awards, trusting that they may meet with your approbation :—

2. J. Ward & Co., *New York*, by J. F. Sawyer, Agent, *Boston*. Union Washing Machine and Wringer. A very efficient, rapid washer; cannot injure the clothes; works by power, and should be thoroughly examined by proprietors of hotels and laundries before purchasing.

Union Mangle. A pretty and compact machine, capable of great power, and well suited to the wants of families. *Diploma.*

3. John F. Sawyer, *Boston*. The World's Clothes Dryer. A good article, and received notice at Tenth Exhibition.

307. Dodge & Foote, *New York*. Home Washing Machine and Wringer. A handy and thorough machine, easily worked. *Diploma.*

308. I. P. Harris, *Salem*. Ransom's Knuckle Washing Machine. A simple and durable machine; its low price will commend it.

313. T. J. Alexander, Agent, *Boston*. Eureka Clothes Wringer. Has received notice at previous Exhibitions.

932. Charles A. Cummings, *Worcester*. Elliptic Clothes Wringer. Simple in construction, and a very good machine.

370. G. P. Palmer, *Boston*. Soapstone Soapdish and Cup. Neatly made.

805. George Coolidge, *Boston*. Handy Soap Holder. Attaches firmly to the tub by a spring. Very good.

470. William P. Spence, *Boston*. Patent Towel Rack. Simple and durable. Mop Head and Scrubbing Brush. Very convenient.

921. Thomas Quinn, *Charlestown*. Clothes Rack. Compact, occupying very little space when not in use. *Diploma.*

980. American Clothes Pin Company, *Boston*. Seaver's Patent Double Fast Pin. An excellent and durable article, grasping the clothes firmly. *Diploma.*

106. I. B. Hamblen & Co., *Boston*. Two Refrigerators. Cooled by combining salt and ice, producing an intense cold, which can be regulated at pleasure. *Diploma.*

123. S. Harnden & Son, *Boston*. Schooley's Patent Upright Refrigerators. These Refrigerators are well known, and have been favorably noticed at former Exhibitions.

Sick-Room Refrigerator. A neat piece of furniture, designed to cool the air of the sick-room. The Committee were unable to test its merits, but if it answers the purpose intended, it would be invaluable to large institutions and hospitals.

160. Colton & Co., *Boston*. Ice-Cream Refrigerator. Designed to keep ice-cream hard after it is frozen. Will be very desirable for saloons.

Family Refrigerator. Shows a cold and dry atmosphere.

Diploma.

185. N. B. Stevens & Co., *Boston*. Slate-Lined Refrigerator. The slate lining, besides being a cold material, will not absorb moisture. *Diploma.*

985. Barrows, Savery & Co., *Philadelphia, Pa.* Combined Dining-Room Water-Cooler and Refrigerator. An "Ice Water Cooler and Refrigerator" of iron, cast whole, and enamelled throughout, or coated with porcelain; tasteless and inodorous; very economical, as the ice which cools the water-tank also cools the compartment at the other end, which may be used to lock up wine or little niceties, the whole being enclosed in a handsome black walnut case. It is made of several sizes, adapted to the nursery, or parties occupying lodgings, and is a useful as well as an ornamental piece of furniture for the dining-room, and well deserving of a

Bronze Medal.

2210. Darius Eddy & Son, *Dorchester*. Upright Refrigerators. Substantially made, roomy, combining simplicity and utility. Filled with pulverized charcoal, well ventilated, lined with zinc, slate shelves, easily washed and never musty. Eddy's Refrigerators have been known since 1847, and have obtained an enviable reputation. For the improvements lately introduced we award a

Diploma.

42. CHARLES W. PACKER, *Philadelphia, Pa.* Packer's Patent Ice-Cream Freezer. This Freezer, which received honorable notice and a Bronze Medal at the last Exhibition for peculiar smoothness and lightness of its cream, has become a general favorite, and for the improvements lately introduced we award a *Diploma.*

591. JAMES DOOLING, *Boston.* Ice-Cream Freezer. A very powerful and rapid beater, and specially adapted for confectioners and hotels. *Diploma.*

648. J. R. CHAMPLIN & Co., *Laconia, N. H.* Four Ice-Cream Freezers. These Freezers still maintain their high reputation for excellence, for which they received a Silver Medal at the Tenth Exhibition.

235. MELLEN, BRAY & Co., *Boston.* Seamless Tin Boxes and Sheet-Metal Stamping. Excellent in workmanship, and deserving a *Diploma.*

449. F. B. PARKS, *Boston.* Foot Bath, Slop Jar, Water Pail and Boot-Rack. Well made and neatly ornamented. *Diploma.*

516. FRANCIS MORANDI, *Boston.* Bath Tubs and Japanned Ware. Faithfully made, well japanned, and entitled to a *Diploma.*

518. A. H. GROVER, *Boston.* Fancy Knife-Box. Neatly made.

561. WOODS, SHERWOOD & Co., *Lowell.* Patent Tin-Plated Wire Goods. So many are the devices, and so great the variety of ingeniously contrived "household comforts" manufactured by this firm, in such tasteful styles, that the extensive demand for them is not in the least surprising. The Committee recommend a *Bronze Medal.*

883. SEAVEY & Co., *Boston.* One hundred pieces of "French" Tinned Goods, Toilet and Fancy Painted Wares, Sheet and Wrought-Iron and Japanned Goods. A fine display. The Stamped ware is strong and heavily tinned; the Japanned ware well finished, and the Toilet and Fancy ware handsomely ornamented, denoting superior facilities for manufacturing goods, that will be fully appreciated. The Committee consider them worthy of a *Bronze Medal.*

1. GEORGE COOLIDGE, *Boston.* Bone Polish for Cleaning Windows. This has proved a very good article for the purpose.

22. Jerome Billings, *Brighton.* Culinary Cabinet. Contains drawers for flour, meal, spices, &c., pastry-board, flour-sifter, roller, egg-beater, and other articles. It occupies but little space, and when closed would be an ornament in any kitchen, and much prized where closet room is small. *Diploma.*

38. D. W. Bill, *Gilsum, N. H.* Chopping Trays. Of good stock, very neatly made, and worthy of a *Diploma.*

278. William R. Middleton, Agent, *Worcester.* Patent Broom-Holder. A useful invention, grasping the handle firmly by means of a cam. *Diploma.*

283. W. C. Frederick, *West Medford.* Patent Coal-Sifter. A coal-hod and sifter combined. A very useful article, and will commend itself to housekeepers. *Diploma.*

287. Christopher Fay, *Boston.* Patent Cane Sieve. The bottom made of cane work.

360. Franklin B. Parks & Co., *Boston.* Improved Spring Cake Cutter. It throws the dough out when cut.

392. American Sleigh and Carriage Iron Co., *Boston.* Dish-Lifters and Egg-Beaters. Very useful, and should be in every kitchen. *Diploma.*

413. R. L. Merritt, *Boston.* Schanck's Patent Dust Pan. An improvement which will meet the approval of every housewife. *Diploma.*

488. John M. Currier, *Haverhill.* Union Flour and Sauce Sifter. Has been noticed at a former Exhibition.

577. B. D. Wallace, *Boston.* Magic Tassel, Combined Stove and Cover Lifter, and Broom and Brush-Holder. All useful articles. *Diploma.*

688. David Wilder, *Cambridgeport.* Fountain Knife Cleaner. The knife is forced between two brushes, filled with emery.

723. J. G. Somes, *Charlestown.* Patent Improved Coal-Hod with Scoop attached. Very good. *Diploma.*

950. American Broom Co., *Providence, R. I.* One dozen Brooms of excellent stock and superior workmanship. *Diploma.*

961. Horace Thompson, *Concord, N. H.* Beefsteak Crusher. Very powerful, and will undoubtedly do all that can be desired.

458. Hiram H. Herrick, *East Boston.* Carpet Sweeper. Contributed by the originator of this useful household benefit. It has been commended at previous Exhibitions.

2368. Otis H. Weed, *Boston.* Improved Carpet Sweeper. Similar in form to his old style, so well known. It sweeps both ways. His improvement of cog-wheels adds much to its durability. *Diploma.*

2480. George G. Taylor, *Charlestown.* Patent Match-Stand. A very pretty black walnut case containing match-drawer and partition for burnt matches. *Diploma.*

536. Scrannage, Bate & Co., *Boston.* Patent Revolving Tumbler-Washer. Received a Bronze Medal at the Tenth Exhibition. For improvements by which the outside of the tumblers are washed, as well as the inside, we now award a *Diploma.*

1002. Ira Dimock, *Florence.* Patent Thermo-Annunciator, or Egg-Boiler. An ingenious contrivance, simple in its structure, exhibiting an application of heat which may hereafter be taken advantage of in other inventions. As an original device for the convenience and comfort of the culinary department, we award for this apparently *little invention* a *Bronze Medal.*

306. Bradford & Anthony, *Boston.* Durable White Handle Table Cutlery. These handles resemble ivory in color, and at not more than two-thirds its cost. They will not crack or break, and are not affected by heat or cold, or discolored by water, which has been proved by being in use nearly two years. These good qualities are sufficient to commend the cutlery of this company for general use, for its economy and durability, and as meeting a great public want, especially from the continued scarcity of ivory and its rapid increase in price. We therefore recommend a *Silver Medal.*

No. 13.

FURNITURE AND UPHOLSTERY.

JUDGES:

James Sharp,	Hollis R. Gray,
Charles R. Jelinek,	Joseph Buckley.

The Committee on Furniture and Upholstery have carefully examined those articles, and respectfully submit the subjoined Report.

Among the contributions to this department are an unusually large number of Spring Bed Bottoms. Each of these has some quality to recommend it, but these differences were not found important, and as some of these contributions have been favorably noticed in former Exhibitions, the present Committee deem it inexpedient to notice any comparative superiority.

2100. Cyrus Wakefield, *Boston.* Rattan Furniture, Baskets, &c. Before Mr. Wakefield commenced the importation and manufacture of Rattan, the enamel only was used for the article called Seating Cane, the pith being considered worthless, and was thrown away. The Seating Cane is now first obtained, and the pith or waste is manufactured into various articles. To bring this department of his manufacture to its present state of perfection, has required a large amount of mental labor, moral courage, and the invention of much new machinery; and also the improvement of such other machinery as had been in use before. Among the new machines, is a complicated power-loom just put in successful operation. To cut the amount of rattan for the enamel for Seating Cane used in this establishment, requires the employment of something over one hundred persons, and to work up the pith, or waste, requires the labor of nearly five hundred persons. Thus the waste has become of greater value than the rattan itself previous to this new application. This material is superior to any other heretofore used in the manufacture of chairs, settees, baskets, matting and mats, being more durable and beautiful; and as the manufacture of these articles is as yet but in its infancy, we can hardly calculate to what magnitude it will finally arrive.

The introduction of so large and important a branch of industry into our country,—which must add vastly to the material wealth of the State,—the energy, enterprise and ingenuity necessary to develop and perfect this branch of manufacture, has been a great accomplishment, and a work that any man may justly be proud of; and one, in the opinion of your Committee, deserving special attention, and we cordially recommend, for a new application of material in the manufacture of a great variety of useful articles, the award of a *Gold Medal.*

2170. Otis W. Merriam & Co., *Boston.* Two Sets of well-made Furniture. *Diploma.*

2266. Daniels, Harrison & Co., *Boston.* Parlor and Chamber Furniture. *Diploma.*

2277. W. Toussaint & Co., *Boston.* Chamber Set, Sideboard, Cabinet, Mantel-Pieces, Ladies' Secretary, Gilt Chair, Umbrella Stand. The designs of the Chamber Set are original and elegant, the ornamentation is elaborate and beautiful, and the workmanship of superior quality. The Secretary is a beautiful and useful little article, and the Sideboard is of chaste design and artistically carved. The Umbrella Stand is a unique article of its kind, of new design and arrangement. Every article in this contribution is rich, chaste, and of superior workmanship. We recommend a *Silver Medal.*

2398. Beal & Hooper, *Boston.* One Toilet Set; One Chamber Set. This contribution is very creditable in its workmanship, excellence of finish, and tasteful design. *Bronze Medal.*

2362. Manson & Peterson, *East Boston.* Eight Extension Tables. Well made. *Diploma.*

2507. F. Geldowsky. *East Cambridge.* Extension Table. Superior movement. *Diploma.*

2194. Boston Furniture Company, *Boston.* Six Patent Folding Chairs. *Diploma.*

2349. Braman, Shaw & Co., *Boston.* Reclining and Arm Chairs. For the good design and finish, and superior workmanship in the upholstering, would recommend a *Bronze Medal.*

2440. J. W. Wetherbee & Co., *Boston.* Two Reclining Chairs. *Diploma.*

2447. Miss H. A. Edson, *Boston.* Patent Rocking Chair. *Diploma.*

2450. HENRY HODSON, *Boston.* Folding Chairs. *Diploma.*

2490. A. M. DAVENPORT & Co., *Boston.* One Fancy Chair. This single Chair is very neatly and beautifully upholstered. Its workmanship is of special merit, and we recommend a *Bronze Medal.*

2039. MRS. CHARLES W. SMITH, *Boston.* Fancy Top Work Table. *Diploma.*

2063. JAMES O. EVANS, *South Boston.* Inlaid Black Walnut Table. *Diploma.*

2178. MRS. MARY E. BARNARD, *Watertown.* Shell Table. *Diploma.*

2184. WILLIAM S. TOWER, *Hingham.* Fancy Top Card Table. *Diploma.*

2430. CONWAY & KELEHER, *Boston.* Imitation Marble Top Table. *Diploma.*

2452. G. W. HALL, *Piermont, N. H.* One Black Walnut Centre Table. This is a round Table and turns upon its own centre, with eight drawers inserted in the frame, which, running toward the centre, must necessarily come to a point. A person sitting at the table may turn it till the drawer desired comes to them. Many persons are pleased with it, but upon examination it will be found to be more new and curious, than practical or ornamental, for the table is too large for a work-table, and if reduced in size, the drawers will be too small for use, but the Committee recommend a *Diploma.*

2477. MRS. M. G. BRIGGS, *Boston.* Five Models of Folding Tables. *Diploma.*

2060. BOYCE BROTHERS, *Boston.* Trefry's Parlor Bed. *Diploma.*

2085. M. B. GOODELL, *Worcester.* Cabinet Bedstead. *Diploma.*

2161. MRS. M. G. BRIGGS, *Boston.* Bureau and Secretary Folding Bedsteads. *Diploma.*

2293. S. S. BURR, *Boston.* Parlor Bed. *Diploma.*

These Folding Beds are quite ingenious and useful contrivances for people who are short of room. In the form of a commode, library case, sideboard or bureau, as the taste may determine, the bed, bedding and bedclothes are inclosed. By an arrangement, varying somewhat in each contribution, they are easily opened and made into a comfortable bed, easily worked and managed, and not liable to get out of order; but the demand for them must be very limited, and the cost of them must be so large, that it seems pretty evident that they can never come into general use. Each of these folding beds has something about it to recommend it, but the differences do not seem to be important, and the Committee do not deem it necessary to particularize, but would recommend to each of the contributors the same award.

2077. **Charles F. Martine**, *Milton.* One Sofa Couch.
Diploma.

2419. **R. B. Baldwin**, *Boston.* One Bed Lounge.
Diploma.

These Couches or Lounges are of the same character of goods, and intended to answer a similar purpose, and the same remarks will apply to them as to the folding beds; and the Committee recommend to each of these contributors the same award.

2511. **The Woven Wire Mattress Co.**, *Hartford, Ct.* Mattress and Spring-Bed of Woven Wire. This is an ingenious invention of wire, woven into an elastic bed bottom, with a good promise of being clean, comfortable, noiseless and durable. But the Committee regret they cannot recommend it in the absence of evidence of its adaptability to general use. If we understand correctly, it will require the use of machinery to stretch the woven wire upon any bedstead, which would prevent its being applied to bedsteads now in use, and the majority of people would probably look for a bed bottom of less cost. Without further explanation, and the better criterion of experience, the Committee can reach no more definite judgment of its merits.

2240. **D. B. Brooks & Bro.**, *Boston.* Croquet Set and Parlor Games. *Diploma.*

2242. **Amasa W. Bailey**, *Boston.* One Billiard Table. This Table is a beautiful piece of work, highly finished, elaborately ornamented with carvings and mouldings, and composed of a variety of beautiful native and foreign woods, entitling him, for his taste, skill and superior workmanship, to a *Bronze Medal.*

2340. Oliver L. Briggs & Co., *Boston.* Parlor Billiard Table. The bed on an approved principle. *Diploma.*

1. George Coolidge, *Boston.* Barker's Patent Window Screen. *Diploma.*

180. Clark & Smith, *Boston.* Samples of Native and Foreign Fancy Woods. Beautiful specimens. *Diploma.*

296. Cutler & James, *Boston.* Knapp's Patent Clock-Spring Shade Fixture. *Diploma.*

440. J. J. McNutt, *Boston.* Wooden Mantel-Piece. *Bronze Medal.*

604. J. H. Bosworth, *Boston.* Patent Carpet Stretcher. A real labor-saving machine, which holds the carpet in its place while being tacked down. Simple, cheap and useful. *Bronze Medal.*

889. Watson & Bisbee, *Boston.* Stair Posts, Stair Railing and Balusters. Specimen Stair Posts, good work. *Diploma.*

2089. Joshua Briggs, *Peterboro', N. H.* Six Piano Stools. *Diploma.*

2095. A. F. Sherman, *Boston Highlands.* A See-Saw. Something new, safe and amusing for the children. The Committee recommend a *Diploma.*

2304. Augustus Bauch, *Dorchester.* Willow Flower Stand. Good design and well made. The Committee recommend a *Bronze Medal.*

886. S. A. Stetson & Co., *Boston.* Ornamental Wood Carvings. Wood medallions, escutcheons, leaves, rosettes, mouldings, curtain pins, &c., done by machinery in natural wood, by The Ornamental Wood Manufacturing Co., Bridgeport, Conn. (See Report of Committee No. 4, on page 71.)

2354. Sorrento Wood Carving Co., *Boston.* Wood Carvings and Monograms. Specimens of delicate work. *Silver Medal.*

2357. H. Leach, *Boston.* Forty-one pieces of Carving. This contribution represents a large variety of heads of animals, both wild and domestic. They are of rare merit, both in conception and execution, being very true to nature and fine specimens of carving in wood. For such skill in these works of art, we would recommend a *Silver Medal.*

No. 14.

CARPETS, RUGS AND MATS.

JUDGES:

JOHN GOLDTHWAIT, FREDERIC B. WENTWORTH,
JOHN SWEETSER.

Your Committee have examined with care the few articles given them to report upon under this head. They regret to find no contributions from the large manufacturers of Brussels, Wilton, Tapestry, Velvet and Ingrain Carpets, of which there are so many in Massachusetts, where there are more of these goods made than in all the other States.

2100. CYRUS WAKEFIELD, *Boston.* Rattan Mats and Matting. These goods are to a great extent taking the place of coir mats and matting, being of a cheaper quality, and for places subject to hard wear, such as theatres, vestibules of public buildings and churches, steamboats, steam and horse-cars, &c., must come into general use. Mr. Wakefield is certainly entitled to a great deal of credit for the perfection to which he has brought these goods. The material of which they are made has always been waste, and until within a few years, has been burned to get it out of the way. It is now spun, woven and braided into these very useful goods, and made a large article of commerce and value. (See Report of Committee No. 13, and award for Rattan Goods, on page 124.)

2296. A. FOLSOM & SONS, *Boston.* Floor Oil-Cloths. The Messrs. Folsom contribute some good specimens of their kind of goods, a light quality of Floor Oil-Cloth Carpets and Rugs. These are well colored, well painted, and of fair designs. Smooth, even edges, and good finish. We recommend a *Bronze Medal.*

2251. GEORGE W. CHIPMAN & CO., *Boston.* Carpet-Lining, Stair-Pads. The Carpet-Lining is a useful article for putting under carpets, and is of good quality. In the manufacture of these goods, fine paper is used, and clean white stock in the filling. For it we recommend a *Bronze Medal.*

The Stair-Pads, by the same contributors, are fair, but not equal to the lining in quality.

2402. B. C. EVANS, Agent BOSTON CARPET PADDING CO., *Boston.* Carpet-Lining and Stair-Pads. These are of similar make as No. 2251, but of a lower and probably cheaper quality, not as good stock being used in the manufacture.

No. 15.

PAPER HANGINGS.

JUDGES:

SAMUEL H. GREGORY, CYRUS HUMPHREY,
HORACE A. BREED.

The Judges appointed to examine Paper Hangings report that they find but one entry of goods in their department, viz.:—

441. BARTHOLOMAE & GARRETT, *New York.* Samples of Paper Hangings and Decoration. The Paper Hangings contributed by this firm are of superior quality of workmanship, and should win for them a high position as manufacturers. The coloring and the blending of the same, in the two decorative pieces, show them to be masters of their trade. Your Committee are of the opinion that for such great improvement in design and execution, they should be granted a *Silver Medal.*

No. 16.

GLASS, EARTHEN AND STONE WARE.

JUDGES:

THOMAS GAFFIELD, ABRAM FRENCH,
DANIEL B. STEDMAN.

The display of goods in this class was not large, and the labors of the Committee consequently were not very onerous or difficult.

It is a matter of regret that our many manufacturers in the useful and elegant art of glass-making, who are so skilled in this department, have not placed on exhibition their last and best productions. We are aware that much labor is involved in the preparation of these specimens, but are decidedly of opinion that a respect for American industry and art should induce our leading manufacturers to do all in their power to make an occasion like this a true exhibition of American skill and ingenuity.

The Committee enumerate below, with their comments thereon, a list of the articles exhibited.

15. A. W. & H. C. Robertson, *Chelsea.* Flower-Pots, Medallion and Statuette. These articles deserve mention for their general good workmanship. The Flower-Pots are of a superior character. We recommend the award of a *Diploma.*

122. T. Harrahan, *South Boston.* Earthen Pot for Plants.

151. J. W. Staniford & Co., *Boston.* Homœopathic Vials, Glass Syringes, &c. The articles exhibited are models of excellence in their line, and deserve honorable mention. *Diploma.*

456. George W. Foster, *Boston.* Druggists' Glass-Ware.

445. J. E. Rice & Co., *Boston.* Four Cut-Glass Lights in Sashes.

715. Richard Briggs, *Boston.* Cases of Decorated China Dinner, Tea and Toilet Sets and Fancy Ware. Mr. Briggs, at a previous Exhibition, received a valuable testimonial for his decorated china. The specimens now exhibited fully maintain their well earned reputation, and few would pronounce them inferior to the best works of foreign production.

873. Story & Mellen, *Boston.* Glass Shades. These Shades are from the manufactory of Messrs. S. J. Pardessus & Co., New York, and are of good quality and form, well annealed, and are deserving of honorable mention, as equalling those of foreign production. *Diploma.*

752. James M. Cook, *Boston.* Stained, Enamelled, Embossed, Ground and Cut Glass. A stained glass window deserves mention for the commendable efforts made by Mr. Cook to supply the

increasing demand for this kind of work in our cathedrals and churches, which has in former years been supplied by foreign manufacturers. While an art-critic might find points of difference and defect in comparing the American with the foreign work, still the specimens exhibited show such a decided advance over those of former years, that the Committee feel justified in recommending an award to the exhibitor, of a *Silver Medal.*

993. SAMUEL WEST, *Boston.* Five Pieces of Stained Glass. The high reputation of Mr. West for artistic designs and skilful and perfect execution is well sustained in all of the specimens exhibited. Each one of the pieces presents a different style of work, and of all we may say, that they will bear favorable comparison with any productions of foreign artists. Every endeavor to bring the work of our skilful American artists into successful competition with those of other lands deserves encouragement, and we therefore recommend an award to Mr. West of a *Silver Medal.*

No. 17.

WATCHES, CLOCKS, SILVER AND PLATED WARE.

JUDGES:

JOSEPH GARDNER,	VINCENT LAFORME,
JOHN BIGELOW,	JULIUS ELSON,
CHARLES W. KENNARD,	NATHANIEL C. POOR,

GEORGE B. FOSTER.

The Judges to award Medals and Diplomas for superior workmanship in the manufacture of Watches, Clocks, Chronometers and Silver Ware, sent for exposition to the Eleventh Exhibition of the Massachusetts Charitable Mechanic Association, would report that they have made a thorough, patient and candid investigation of the contributions referred to them, and in so doing have endeavored to divest themselves of all prejudice. They find that, taking into consideration the number and variety of New England manufacturers; the great amount of ingenuity manifested; the progress displayed in fine mechanical inventions and improvements; the exertion manifested by each maker to reach the tidemark; and the height of perfection to which mechanical skill is being carried in this section of our country, the array before them made it a matter of considerable delicacy to arrive at a satisfactory and determinate conclusion.

With these preliminary remarks, we present herewith the result of our deliberations.

692. George P. Reed, *Boston.* Case of Four Gold Watches, with G. P. Reed's Chronometer Movements. Also, four Movements without cases. According to the certificates and testimonials of the highest authority, which lie before us, some sixteen or eighteen of these watches are running "with wonderful accuracy," and prove to the owners, in all cases, "perfectly satisfactory." One of these movements being submitted to the scrutinizing investigation of the Chairman of the Judges, he reports, that "in his opinion, it is equal if not superior to any of the most celebrated European makers, and with feelings of national as well as local pride, he would challenge the world for a watch of similar finish, beauty and excellence."

The Improvement in the Chronometer proper of Geo. P. Reed's, consists of a simplified application of the locking and lifting springs, and, also, the arrangement of the detent in such position as to allow the escape of the wheel teeth at a less arc of balance vibration, thus preventing its liability to stop while the balance is passing its intersecting point. This improvement, the result of no inconsiderable labor and experience, must be of incalculable benefit to the trade, as the simplified application and adjustment can at once be seen by any good workman.

In the Micrometer invented by Geo. P. Reed, he claims that, by the application of a spring and screw to the common pointer or index, a very minute regulation may be obtained, obviating the springing or jumping of the pointer which often occurs in the best watches. The pressure of the spring against the regulator on one side, and of the screw on the other, renders its operation very accurate, and it would seem almost perfect. It is to be hoped that this ingenious method of regulation may come into general use upon higher grade watches.

We award for the Improved Chronometer Escapement a *Gold Medal.*

And for the Micrometer a *Silver Medal.*

696. American Watch Co., *Waltham.* One case of American Watches. This company contribute a case of Watches which presents a very fine display. At the last Exhibition they were awarded a Gold Medal,—and, therefore, place their watches at this time on exhibition only.

736. **George H. Grueby**, *Boston.* Thomas' Calendar Clocks. Mr. Grueby exhibits two of Seth Thomas & Sons' Calendar Clocks. They present fine finish of the cases, and accurate workmanship of the movements. These clocks are becoming general favorites with our bankers and merchants.

759. **E. Howard & Co.**, *Boston.* Watches and Clocks. Messrs. Howard & Co. contribute a patent Stem-Winding Watch, which combines the advantages of simplicity of construction with great strength of parts, and is not liable to get out of order. It is, in these respects, the most practical stem-winder your Committee have yet seen. They also exhibit a case of their justly celebrated watches, having made many improvements on them since the last Exhibition. Regarding their work as superior to that of many makers for general excellence, uniformity and evenness of manufacture, which is a characteristic of this firm, and as they have already received a Gold Medal for them, at a previous Exhibition, your Committee think further comments unnecessary at this time.

We would call special attention to Messrs. Howard & Co.'s Gallery and Office Clocks, and also to the Steeple and Regulator Movement. There are many improvements in their clocks, which space will not allow us to chronicle. Suffice it is to say, that no good clock-maker can take apart one of their movements, without being struck with the general finish, fine polish and square shoulders given to the pivots; the true end and side shakes; the perfect epicycloidal form of the teeth where they act upon the pinions; the fine escapement,—each and all of these combined make the sure, satisfactory and reliable timekeeper, which has proved so worthy of public confidence. We would call special attention to their hardened and tempered Hair-Springs. Also, to a spool of fine Hair-Spring Wire, which is judged to be unequalled in this country.

We award for the Regulators, with Mercurial Pendulum a
Gold Medal.

And for the Stem-Winding Watch a *Silver Medal.*

894. **William Bond & Son**, *Boston.* One Mean Time Clock, with improved gravity Escapement, No. 370.

One Astronomical Clock, with new improved Escapement, No. 396.

One Astronomical Clock, Graham Escapement, No. 400.

One Chronograph, with improved Escapement, No. 399.

One Case Chronometers and Watches.

Messrs. Bond & Son contribute an Astronomical Clock with an entirely new Detached Escapement, the object of which is to relieve the pendulum from all possible work, so that it shall vibrate with absolute freedom, unaffected by any influence from the clock. This is a most interesting monument of the skill and ingenuity of the late lamented RICHARD F. BOND, who, when this wonderful piece of mechanism was nearly completed, caused its removal to his sick-chamber, that he might superintend it to the end. It is no trifling evidence of the skill of the workmen of the establishment, that they were able to carry out his views so admirably, from merely verbal instructions. He survived its completion but three days, thus bequeathing to the world a fitting memento of enduring fame.

Besides its escapement, this clock is also remarkable for its peculiar weights, being simply balls, which, rolling on the cord, exert their whole power on the movement, while those in general use waste much of their momentum in overcoming the friction of the pulley. The break circuit is also noticeable, being the only one known which has stood the test of years without the slightest failure. As this clock, like all of Messrs. Bond & Son's manufacture, is intended for an observatory or other scientific purposes, they have aimed at simplicity of style, perfection of workmanship, and accuracy of performance only,—ornamentation being out of character in clocks of so high a grade; and indeed it has seldom been our lot to view such a beautiful and scientific piece of workmanship.

We would call the especial attention of scientific men and astronomers throughout the country, to this great piece of mechanism, and also to the other admirable clocks, chronometers, and chronographs exhibited by Messrs. Bond & Son.

The Chronograph is very much improved and simplified since its first invention about twenty years ago. The Spring Governor, which is its great feature, has proved itself a perfect regulator for rotary motion, and has been applied to driving clocks for many equatorial telescopes, with such success that it will keep the micrometer wire on a star for nearly an hour. It has been invaluable in stellar photography, where perfect steadiness of motion is an absolute necessity. We award for the New Clock a *Gold Medal.*

And for the Chronograph a *Silver Medal.*

347. PALMER, BACHELDERS & Co., *Boston.* Three Watchmakers' Patent Lathes; Watchmakers' Oil; Watchmakers' Patent Gauge. A fine collection of watchmakers' tools and materials, finished in a beautiful and workmanlike manner. Among them we notice Dennison's celebrated Universal Gauge, the *ne plus ultra* of watchmakers' measurement. We award to this collection a *Diploma.*

621. Crosby, Morse & Foss, *Boston.* One case Silver Goods. This exhibition, embracing many pieces of rich Hollow and Table Silver Ware, in point of style, quality and finish, is equal to any manufacture known to the Judges, and fully sustains the eminent name of the exhibitors as leaders in their art. Award, a *Silver Medal.*

597. Reed & Barton, *Taunton.* One case of Silver and Gold Plated Goods. This firm exhibit a large case of Silver-Plated Ware, comprising an elegant variety of Hollow and Table Ware, plated upon Nickel and White Metal foundation. The Judges are warranted in pronouncing this display of Ware to be of superior merit, unsurpassed in quality and style. The durability of Reed & Barton's ware has so long been known to the Judges, that they feel it their duty to accord to them the position of *first* among the manufacturers of plated goods, and for general excellence award them a *Silver Medal.*

543. Porter Britannia and Plate Co., *Taunton.* One case Silver-Plated Ware. A large exhibition of Hollow Ware plated on Soft Metal, many pieces of handsome form and style.

703. Brown & Russell, *Boston.* One case of Nickel Silver-Plated Ware. An assortment of Hollow Ware plated on German Silver, embracing many beautiful and well-finished designs of Tea and Dinner Services, and of such a superior quality as to merit the award of a *Silver Medal.*

780. Guild & Delano, *Boston.* One case of Masonic Jewels. A very complete exhibition. These may be considered quite an advance upon the jewels formerly used in Lodges, both in originality of design and workmanship. This firm has devoted special attention to this branch of their business, and has taken pains to symbolize Masonry, and produce an article strictly in accordance with the requirements of the Order.

No. 18.

MANUFACTURES OF SILK, COTTON, FLAX AND WOOL. (LIGHT FABRICS.)

JUDGES:

William F. Nichols, John Shepard,
Ebenezer M. Watson, John O. Waterman.

The Committee to whom was intrusted the examination of manufactures of Silk, Cotton, Flax and Wool, take this opportunity to suggest to the Managers of the Massachusetts Charitable Mechanic Association, that a more definite and accurate division of the numerous American manufactures, that they believe are embraced in textile fabrics, be made, believing that a committee selected from the best dry goods houses of this city are more competent to award upon articles of ladies' wear than a committee composed of gentlemen, who may be equally competent in goods in their own legitimate business, but who neither have occasion to examine such goods, or come in immediate business relations with the large class of people who purchase them. The Committee speak of this more particularly now, as the manufacture of Silk, Cotton and Worsted is daily developing in this country, and a much larger space will be demanded for exhibiting such every time the Massachusetts Charitable Mechanic Association hold an Exhibition.

The Committee would further say, that they were pleased to see so much better a display in their particular goods than at the last Exhibition, but still many manufactures were not represented, and it makes it very difficult to make judicious awards, knowing that while many of the goods are very deserving, still, remembering that other parties manufacture similar goods, of equal or superior merit, that a discriminating public, not knowing the particular manufacturers represented, might express, and not without cause, an opinion that partiality was manifested by the Judges.

The Committee would very briefly pass over many articles, merely to show that they gave attention to them, and yet they did not bear intrinsic merit to repay that attention, either in the fact that the display was very inferior in some things, or in the still more important fact, that only one manufacturer's goods were on exhibition, and consequently could have no comparison.

The Committee, in closing their Report would say, that they have endeavored to do justice to the various exhibitors. They have spoken of merit where they believed it belonged, and have not hesitated to speak otherwise when, as they consider, it was necessary.

The Committee would earnestly express the wish, that a much larger number of our New England manufacturers would take advantage of the opportunity these Exhibitions afford, to enter into friendly competition, believing that thereby American manufactures will be greatly stimulated.

2092. NONOTUCK SILK CO., *Florence*, G. D. ATKINS, Agent, *Boston.* One case Sewing Silk and Machine Twist. For which we award a *Silver Medal.*

2218. O. W. Gardiner & Co., *Boston.* One case Yarns, Braids, Twist and Silk. For the Machine Silk and Twist a *Diploma.*

Skirt Braids. For superiority of Worsted and Alpaca Braids the Judges award a *Silver Medal.*

2258. Seavey, Foster & Bowman, *Boston.* Sewing Silk, Machine Silk and Twist. We award a *Diploma.*

927. The Hadley Company, *Holyoke,* Arthur T. Lyman, Treasurer, *Boston.* Hadley Six-Cord, Soft-Finish Spool Cotton and Winding-Machine. The Committee fully endorse the report of the Judges of the Tenth Exhibition. (See page 111 of Report for 1865.)

2137. E. J. W. Morse & Co., *South Easton.* Sea Island Cotton Thread. Of good quality and strength.

907. Fletcher Manufacturing Co., *Providence, R. I.* Lamp Wicks, Boot and Shoe and Corset Laces, Braids, Yarns, &c.

938. Nathaniel B. Sherman, *Boston.* Cotton Wicking. Two balls of wick so situated that the conclusion was forced upon the Committee that the manufacturer was satisfied as to the quality.

2056. Charles Morse, *Boston.* Black Linen Thread. A bundle of Linen Thread, which from its exalted position, would not attract attention, if it merited such.

2216. Merrimack Manufacturing Co., *Lowell.* Loom, Harness and Fancy Twine. Good.

2107. Cooper & Southworth, *Stoughton.* Bonnet Wire. Worthy of special notice, and the Committee would award a *Diploma.*

2051. Hodgkins & Barnard, *Boston.* Four boxes Worsted Knit Clouds. Good.

2166. John Harrington & Co., *Boston.* One case Worsted Goods. A handsome display of knit worsted goods.

2418. CHAMPNEY BROTHERS & CO., *Boston*. One case Knit Worsted Goods. For superiority of the articles exhibited, the Committee would award a *Diploma.*

2410. THE STEVENS LINEN WORKS, *Webster*, NEVINS & CO., Agents, *Boston*. One case of Linen Goods. Crash. A well manufactured article. The Committee also notice a piece of Linen Damask, which for early production is highly creditable.

2500. KINGMAN & ROBINSON, *Boston*. Awning Goods. Mildew and water-proof drills for awnings. The Committee feel incompetent to judge of a single piece not subjected to any test.

2222. L. H. BRIGGS, *Boston*. Eight Tricot Quilts. A novelty in the style of manufacture.

2047. STODDARD, LOVERING & CO., *Boston*. Fifteen pieces Sheetings, twelve pieces Silesia, one case Linen Fold. DAVOL MILLS cotton and silesias, lately introduced in the market, and worthy of attention.

2474. DEXTER, ABBOT & CO., *Boston*. Two cases Silesias. Social Silesias. Justly deserving attention, rivalling in quality, finish and putting up the popular English silesia.

2321. POMEROY, ADAMS & CO., *Boston*. Embroidered Flannel. This firm show a new article in embroidered flannel for skirts and infants' wear, that is worthy of special notice. The embroidery is an excellent imitation of hand-work, and the Committee would recommend a *Bronze Medal.*

2320. DALE BROTHERS & CO., *Boston*. One case Flannels. The Stevens Flannels, in various widths. For uniformity, smoothness and silkiness of finish, and general superiority, the Judges would award a *Diploma.*

2324. DAMON, SMITH & CO., *Concord*. Wool Shaker Flannels and Fine Dometts. Merit deserved attention, and we would award a *Diploma.*

2463. BOSTON PRINT WORKS—J. J. BIRKMAIER & BURNS, *Boston*. Samples of Printed Satinets and Flannels, which show considerable merit, and were worthy a better display on their part than samples of a few inches.

2045. James Y. Smith Manufacturing Co., *Providence, R. I.*, by Sargent Bros. & Co., Agents, *Boston.* Twelve pieces Elmwood Cotton. Merits particular notice for its fine texture, roundness of thread and evenness, and we would award a

Silver Medal.

2190. Forestdale Manufacturing Co., *Slatersville, R. I.*, by George H. Braman, Agent, *Boston.* Ten pieces Bleached Cotton. Forestdale Cotton, good for medium grade.

2196. The Hampden Mills. P. T. Jackson, Agent, *Boston.* Seventy pieces Ginghams; Thirty pieces Cottonades. The Hampden Cottonades, for style, weight, and solidity of manufacture, the Committee think are equalled by few makers. The "Hampden" and "Earlston" Ginghams give evidence that Scotch manufactures have a dangerous rival, and for perfection of manufacture, finish and folding, the Judges would award the "Earlston" Ginghams a

Silver Medal.

2289. E. R. Mudge, Sawyer & Co., *Boston..* Twenty pieces Plaid Poplins; two pieces Plaid; six pieces Cotton Flannel; one piece Empress Cloth; four Table Covers.

This firm exhibit, from the Washington Mills at Lawrence, Embossed Felt Table Cloths, very excellent work; Plaid Flannels, which merit attention; All-Wool Empress Cloth, for early production of the Washington Mills, is particularly noticeable; Worsted American Poplins; these Plaids are really meritorious, and compare in colors, style and quality with goods of French and German manufacture, and the Judges would recommend a *Silver Medal.*

Also, from the Chicopee Manufacturing Co., Ellerton Cotton Flannel, which for quality of drill, and weight, the Committee think superior to any other manufactured, and would award a

Bronze Medal.

2303. Wheelwright, Pippey & Anderson, *Boston.* Thirty-two pieces Cabot and Kearsarge Cottons. The Cabot Cotton is justly popular, but the Committee would particularly mention the Kearsarge Cotton, which deservedly takes high place in cotton manufactures. The beauty and length of staple, its clear and uniform surface, its perfection of bleach and finish, by Messrs. Sayles & Co., induce the Judges to recommend a *Silver Medal.*

2310. Gardner Brewer & Co., *Boston.* Flannel, Cotton, and Woollen Goods, Reps and Delaines. This firm exhibit from the Salisbury Mills: Salisbury Flannels, neat designs; Gents' Travelling Shawls, weighing about six pounds, varying in styles and coloring to suit the later fashions; they always maintain their merited standard of quality, and are fully equal, if not superior, to foreign shawls. Plaid Repellants, attract by serviceable weight, and by being a thorough repellant of water. The Judges would award to the Salisbury Mills, for Shawls and Plaid Repellants, a

Silver Medal.

The Ticks and Denims from the Amoskeag Manufacturing Co., at Manchester, N. H., merit well the numerous testimonials that have been awarded them, and the Committee think them still preeminent.

Crash, from the Stark Mills, Manchester, N. H., the Judges deem the most noticeable exhibited, and from their knowledge of its excellent quality, would award a *Silver Medal.*

The Delaines, from the Hamilton Woollen Co., Southbridge, merit well for printing. The Tycoon Reps, from same company, are worthy of special notice. The variety of colors in printing are admirably produced and distinctly outlined.

2360. The Arlington Mills. R. M. Bailey & Co., Agents, *Boston.* One case Dress Goods, displaying a variety of Dress Goods fabrics composed of Worsted and Cotton. For superior workmanship and close resemblance to the best makes of English goods of similar character, they are worthy, in the opinion of your Committee, of a *Silver Medal.*

2442. Cocheco Manufacturing Co., *Dover, N. H.* Lawrence & Co., Agents, *Boston.* Twenty pieces Cocheco Prints. The Judges would speak particularly of the elegance of style of the Cashmere patterns, and their elaborate printing and combination of colors.

2074. The Dalby Mills, *Newton.* O. H. Sampson & Co., Agents, *Boston.*

A case of Hosiery, Cardigan Jackets, Gai[illegible]rs, Gloves, Mittens, &c., from the Dalby Mills, of which G. M. Dayton is manufacturing agent. The attention of your Committee was called particularly to the superior quality and finish of these goods. The men's merino half hose compare favorably with those from the most noted English manufacturers, and the ladies and misses *full-fashioned* merino hose your Committee consider superior to any ever made in this country.

The misses "extra long" legs, in white, scarlet and blue, and the misses and children's balmoral, in one, two, three, four and six colors, attracted our particular attention from their brilliancy and combination of colorings.

The gentlemen's cardigan jackets, of extra quality and finish, are superior to any we have ever seen manufactured in this country. This mill receives the wool in its raw state, and manufactures and dyes all the yarns used in the manufacture of these goods. Your Committee understand that the goods made by this company are having a ready sale with some of the best houses in the principal cities, who have formerly sold exclusively foreign goods; and we believe, to a great extent, they will soon supersede those of a foreign manufacture, which have been so largely imported into this country.

For the superiority in manufacture and finish of the above articles your Committee award a *Silver Medal.*

2106. A. Southworth & Son, *Stoughton.* One case Printed Yarns, showing great progress in this department of manufacture.

No. 19.

MANUFACTURED WOOL. (HEAVY FABRICS.)

JUDGES:

Edward W. Kinsley,
Alvah A. Burrage,
William H. Talbot,
Charles B. Barnes,
Edward A. Studley.

It is greatly to be regretted that the display of articles in this department, considering the magnitude and importance of the interest they represent, is so exceedingly meagre. And it is to be hoped that in the future the Woollen Manufacturers of New England, and especially those in Massachusetts, from a sense of local pride as well as for their pecuniary advantage, will be induced to offer the best specimens of their fabrics at these Exhibitions; and not show an undue partiality by exhibiting their goods in other cities, east and west, while the metropolis of New England is neglected.

Your Committee offer the following summary of the articles submitted for their judgment:—

2126. Almy & Co., *Boston.* Fourteen pieces Woollens.

Black Doeskins, 3-4 and 6-4, from the Slade Woollen Co. The heavier specimens are excellent, and will compare favorably with the best German goods of like grade, and are deserving of a *Diploma.*

Alaska Beavers and Black Shoe Beavers from the Worumbo Manufacturing Co.

Felt Chinchillas and Witneys from the Union Manufacturing Co.

2222. The Stratton Mills, by L. H. Briggs, Agent, *Boston.* Black Union Beavers.

2289. The Washington Mills, *Lawrence*, by E. R. Mudge, Sawyer & Co., Agents, *Boston.* "Scotch" Cassimeres; All-Wool Beavers.

The All-Wool Beavers are well-made goods, and compare favorably with foreign makes of similar grade, and are worthy of a *Diploma.*

6-4 "Scotch" Cassimeres, a durable fabric.

2310. The Salisbury Mills, *Amesbury*, by Gardner Brewer & Co., Agents, *Boston.* All-Wool Fur Beavers, Chinchillas, &c.

The Beavers and Chinchillas are excellent fabrics, fully equal in quality of texture and finish to any foreign goods of the same class and grade, and richly merit a *Diploma.*

Repellants and Silk-Mixed Coatings, serviceable goods.

No. 20.

CLOTHING AND FURNISHING GOODS.

JUDGES:

William D. Hay, Charles E. Elliot,
J. R. Burditt.

The Committee have carefully inspected such articles as were entered for competition, and would most respectfully offer the following as their Report.

Your Committee would say that the contributions not specially mentioned have received the same careful notice as the others, but, though meritorious in themselves, they hardly deem them of that importance as to require special notice at their hands.

2090. GEORGE W. CARNES & Co., *Boston.* One case Boy's Clothing. For superior designs in cutting, workmanship, the excellent selection of fabrics and colors, and superior finish of each garment, they would recommend the award of a *Bronze Medal.*

2207. THE DUDLEY HOSIERY Co., *Newton Lower Falls*, by PERRY. WENDELL, FAY & Co., Agents, *Boston.* Merino Under Shirts and Drawers. The Committee would recommend the award of a *Diploma.*

2220. MOSES PALMER, Jr., *Boston.* Palmer's Double-Yoke Sacque Shirts. The Committee have carefully examined the claim of Mr. Palmer for improvement in construction in his Double-Yoke Sacque Shirt, and find it worthy of notice, and recommend that he be awarded a *Bronze Medal.*

2415. JAMES B. MACOMBER, *Boston.* One case of Shirts. We recommend for this case of Shirts the award of a *Diploma.*

2462. E. R. CLEAVELAND, *Boston.* One case of Shirts. Upon thorough and close examination of all the shirts in the Exhibition open to competition for prizes, your Committee conclude that for excellence of finish and seamstressing, these Shirts are entitled to the claim for superiority, and the Committee would recommend the award of a *Bronze Medal.*

2167. ALEXANDER B. WILCOX, *Lowell.* Patent Combination Suspenders. Your Committee have examined this case of goods, and find them excellent as specimens of American manufacture in this line of goods, and for the improvement introduced in the patent adjustment strap at the back, which your Committee consider as worthy of particular notice, they would recommend the award of a *Bronze Medal.*

2365. WHITE BROTHERS & KILBURN, *Boston.* One case of Gloves and Mittens. As specimens of American manufacture your Committee consider these goods to be well worthy of notice, and would therefore recommend the award of a *Bronze Medal.*

2400. **William Clapp & Co.**, *Boston.* One case Dress Trimmings. For good taste in selection of colors and manufacture of Tassels and Fringes, they would award a *Diploma.*

2406. **Boston Manufacturing Co.**, *Waltham.* Three cases Hosiery.. This exhibition of American hosiery, by its superior quality and general excellence of manufacture and design, made a most creditable display, and the Committee would cheerfully recommend the award of a *Silver Medal.*

2429. **Lawrence & Co.**, *Boston.* Fifty-seven boxes Hosiery and Gloves. This collection of goods, being of one or two special lines of manufacture, although of great excellence, your Committee do not deem entitled to more than the award of a *Bronze Medal.*

No. 21.

HATS, CAPS AND FURS.

JUDGES:

William M. Shute, **Samuel O. Aborn.**

The Committee regret the meagre display of Hats and Furs, but one case of each being exhibited.

2433. **A. N. Cook & Co.**, *Boston.* One case Furs; one case Hats. Messrs. A. N. Cook & Co., have one case of handsome and varied specimens of furs, mostly of foreign manufacture, for which we award a *Diploma.*

They also have one case of Moleskin Hats placed for exhibition only.

No. 22.

FANCY MERCHANDISE.

JUDGES:

James H. Weeks, Warren S. Davis,
William E. Abbott, Henry A. Choate,
Robert E. Mosely.

The Government of the Association, wisely acting in harmony with the spirit of the age, appointed for the last, as well as the present Exhibition, a Ladies' Committee, to whom have been assigned many of the lighter articles formerly given in charge of the Committee on Fancy Merchandise, thus materially lightening their labors, although not altogether relieving them from the inspection of many contributions which have neither utility nor beauty to recommend them.

In several Departments the Committee find a remarkable improvement since the Exhibition of 1865. They respectfully submit the following report:—

306. **Bradford & Anthony**, *Boston.* Fishing Tackle. Entirely manufactured by this firm, forming one of the finest displays in this department ever exhibited in New England. It consists of Rods almost too elegant for use, Artificial Flies of every variety of plumage, and Books for their safe keeping. An Improved Portable Whalebone Landing Net, and Silk Waterproof Line, are claimed to be superior to anything heretofore manufactured. *Silver Medal.*

731. **P. H. Walker & Co.**, *Boston.* Case of Fishing Tackle. Embracing a complete assortment of all articles required by sportsmen. Especially noticeable in this collection is the fine variety of Artificial Bait. Also Salmon and Bass Reels of rare finish, and Patent Hook for Blue Fish, with spring attached, to prevent eel-grass from following the bait. *Bronze Medal.*

788. **Livingston Stone**, *Charlestown, N. H.* Live Trout and Salmon artificially hatched and reared at the "Cold Spring Trout Ponds." The managers of this establishment have references as to their success, from Prof. Agassiz, and other persons of the highest respectability. They are prepared to furnish the three leading va-

rieties of American Game Fish, viz., Trout, Salmon, and Black Bass, supplying either the spawn or young fish, as may be desired. *Silver Medal.*

2070. J. C. Willis, *Boston Highlands.* Stuffed Sea Ducks. Good specimens and well preserved.

2122. Charles M. Seaver, *West Roxbury.* One case Stuffed Birds. Well executed.

2165. N. Vickery, *Lynn.* Two cases Stuffed Birds and Animals. These specimens are well preserved and artistically arranged. "Our Special Artist," if he be American, certainly deserves patronage. A Medal was awarded at the Exhibition of 1865. *Diploma.*

2169. Daniel M. White, *Malden.* Case of Insects. Fine specimens, and well preserved and arranged. *Diploma.*

2288. James Jillson, *Hudson.* One case of Stuffed Birds. A great variety of birds of beautiful plumage, admirably preserved. *Diploma.*

43. M. J. Ralli, *Boston.* Model of Steam-Engine. *Diploma.*

496. E. P. Furber, *Boston.* Model of a full-rigged Ship, in case. Exhibiting not only skill, but exemplary patience.

463. R. T. Spill & Sons, *Leominster.* Sample Case of Dressing Combs. Well finished. *Diploma.*

680. E. Prescott, *Leominster.* Fancy, Shell and Imitation Back Combs and Bracelets. A great variety, of good designs and high finish. *Bronze Medal.*

2093. Miss Mary A. Stimpson, *Charlestown.* Specimen of Hair Work. Artistically arranged, and one of the best specimens in the Exhibition. A Bronze Medal was awarded at the last Exhibition.

2181. Anthony Gilbert, *Providence, R. I.* One case Wig Work. A remarkably fine collection of gentlemen's Wigs, including a "Gossamer Ventilator," weighing only one and a quarter ounces. *Bronze Medal.*

2239. Miss Nellie E. Keyes, *Boston.* Hair Work. Elaborate specimen, and beautifully executed. *Diploma.*

2341. Mrs. A. Williams, *Cambridgeport.* Hair Wreath and Bouquet. Of superior workmanship, and exhibiting good taste in design. *Diploma.*

2441. Miss Mary E. Harlow, *Malden.* Hair Wreath and Harp. Well designed and beautifully executed. *Diploma.*

2498. Mrs. F. F. Webster, *Chelsea.* Hair Wreath. One of the finest specimens in the Exhibition, both in design and execution. *Bronze Medal.*

52. C. H. R. Cheney, *Wakefield.* Case of Carvings. Made while in the army, from Beef Bones.

262. Thomas Miller, *Boston.* Specimens of Wood Turning. Well executed.

417. B. Noyes & Co., *Boston.* Case of Fire Kindlings. An article already favorably known to good housekeepers.

455. Hiram Fuller, *Boston.* Inlaid Picture of Wood. Skilful workmanship, and showing an artistic eye for color.

674. Charles Robinson, *Boston.* Case Fancy Toys. Consisting of Ball Arrows, Arrow Guns, &c. New inventions, very attractive to children. *Bronze Medal.*

912. T. T. Kimball, *Boston.* Articles made from the "Old Elm" on Boston Common. Valuable from association.

2031. E. H. Gowing, *Reading.* Carved Match Safe. Of good workmanship.

2067. William S. Tower & Co., *South Hingham.* Case of Wooden Toy Ware. A great variety of articles, attractive to the juveniles, neatly made and worthy of a *Diploma.*

2118. Albert B. Chard, *Chelsea.* Case of Wooden Figures. Carved with a pocket-knife, showing great patience.

153. M. J. Rice, *Boston.* Stereoscopes, Card Photograph Frames, Handkerchief Boxes, &c. *Diploma.*

379. J. J. LEIGHTON & Co., *Boston*. Impervious Boxes. Made of wood by an entirely new process, without joint or seam, by glueing two layers of thin wood firmly together. It cannot split, and is perfectly tight and impervious to oil. They are recommended to apothecaries and fancy grocers, both for their excellence and cheapness. *Bronze Medal.*

728. GEORGE B. HARRINGTON, *Boston*. Fancy Paper Boxes. In great variety of style and handsomely finished. An air-tight case for Furs is worthy of commendation and a *Diploma.*

2066. BOSTON DIATITE Co., *Boston*. Photograph and Picture Frames, Martingale Rings, Inkstands, &c. These articles are made from a new patent waterproof material, and merit attention, not only for beauty of design, great firmness and solidity, but also for their cheapness, being less than half the price for similar articles made from gutta percha. *Bronze Medal.*

2078. ALFRED GORHAM, *Boston*. Fancy Frame. Very ingenious.

34. R. PUFFER, *Boston*. One Oonoscope. Valuable to epicures.

40. WILLIAM B. WARD, *Woburn Centre*. Two Pictures, with "Reticulated Star Frames." Elaborate piece of workmanship, consisting of 24,092 pieces. *Diploma.*

136. E. K. HAYNES, *Boston*. Lamp Shade and Reflector Combined. So made as not to darken the room; a simple and useful invention. *Diploma.*

212. FERDINAND WOLF AND HENRY HANF, *Boston*. Patent Eclipse Pepper-Caster and Dredging-Box. Valuable for hotels, or where cooking is required on a large scale. *Diploma.*

328. WILDER & ESTABROOK, *Boston*. One case Cigars. This case contains Regalias, Londres fino, Flor de Prensado, Londres Corte, Conchas and Opera, made from Connecticut seed wrappers and Havana fillers. They have a fine finish and excellent flavor. Also Partagas, two different brands, Figaros, three brands, and Cabanas, two brands. These last are made from all finest Havana tobacco, are very attractive in finish, and will favorably compare with best Havana cigars. *Bronze Medal.*

354. **Mayo & Morse**, *Bath, Me.* Patent Show-Case. Has many advantages over the old style. A sliding door, which economizes room, protects the glass, and, by fitting closer, gives a more effective protection from dust. The friction-springs hold the door closed, or in any position that may be desired. *Bronze Medal.*

354. J. **Bragdon**, *South Boston.* Glue-Pot, with Cone Heater. For equally diffusing heat. *Diploma.*

461. C. S. **Fifield**, *Lynn.* Hotel Advertising Frame. A good specimen of workmanship, meriting a *Diploma.*

498. **John Robbins**, *Boston.* Railroad Baggage and other Checks. Made of brass. Superior workmanship. *Bronze Medal.*

504. **Ballard, Sampson & Co.**, *Worcester.* Spike, Nail, Brad and Tack Puller. A new invention, which will draw nails *without*, as well as *with*, a head. A very ingenious and convenient instrument, which no housekeeper should be without. *Diploma.*

636. **Burr & Perry**, *Boston.* One case Nursing Bottles. These goods, already well known to druggists, are decidedly the best in the market, combining all the advantages of the English bottles with many improvements not found in any other kinds. *Bronze Medal.*

783. E. G. **Wright & Co.**, *Boston.* Rack for Music Book. With separated prongs that adapt themselves to the varying thickness of either side of the open book. *Diploma.*

916. J. P. **Reynolds**, *Salem.* One frame, Military Coat of Arms. Handsomely lithographed in color and bronze.

977. D. C. M. **Rupp**, *Boston.* Graduated Thread-Winder. With a centre extension giving any required length.

996. **John W. Hodgdon**, *Boston.* Case of Pocket-Books, Wallets, &c. In variety of style and excellence of workmanship these goods are in every way equal to the best Paris or Vienna manufactures. *Bronze Medal.*

2369. F. E. **Weber**, *Boston.* Bouquet, made of Sugar. Novel and ingenious. *Diploma.*

2282. J. P. Wasley, *Boston*, aged 84 years. Fruit and Flower piece. Very beautifully painted. *Diploma.*

2282. J. R. Wasley, *Boston*. Design for Table-Cover. Very artistic.

2243. Lamprell & Marble, *Boston*. American and Odd Fellows' Flags. The decorations of the Exhibition were supplied by this firm, and evince good taste. For this, as well as for superior workmanship, the Committee award a *Bronze Medal.*

2169. Daniel M. White, *Malden*. Portable Music-Stand. When closed, forms a walking-cane. *Diploma.*

No. 23.

CHEMICALS, PAINTS AND OILS.

JUDGES:

Augustine G. Stimson, Dr. S. Dana Hayes,
A. Sigourney Bird, George O. Carpenter,
Robert Wharton.

This Committee have examined the articles and claims presented by more than one hundred exhibitors, and have given them all the care and attention that their limited time would permit.

Many improvements in manufactures have been noticed, for which we would advise such awards as are designated below.

124. Warfield Soap Co., *Providence, R. I.* Family Soap Pure and good, deserving a *Diploma.*

233. I. L. Cragin & Co., *Philadelphia, Pa.* Dobbins' Electric Soap, and Box for containing Boot-Blacking. For the latter, a *Diploma.*

247. Curtis Davis, *Boston*. Laundry Soaps. Pure and excellent. Your Committee consider the Laundry Soaps exhibited by this manufacturer as the best, and award a *Bronze Medal.*

617. William F. Robinson, *Boston*. Danforth's Bon Ton Soap, Toilet Soaps, and New York Desiccating Co.'s Prepared Cocoanut. This last is a convenient, new article, for which we award a *Diploma.*

666. Enoch Morgan's Sons, *New York.* Sapolio. An efficient scouring soap.

2312. Allen & Co., *Boston.* Liquid Soap. An efficient cleanser.

2446. George W. Safford & Co., *Boston.* Toilet and Gold Dollar Laundry Soaps. The former in great variety, very neatly packed, and of superior quality; the latter a pure, neutral, tallow oil soap. Your Committee award to this firm a *Bronze Medal.*

204. Salem Laboratory Co., *Salem.* Alum and Blue Vitriol. Large, handsome crystals.

919. Daniel C. Hood, *Boston.* De Cordova's Annatto-ine. A vegetable coloring and dyeing material.

928. Cross & Messer, *Boston.* Liquid Ammonia. Of standard strength and purity.

721. L. Martin & Co., *Philadelphia, Pa.* Chemicals. The Lampblack, Acetic Acid, Citrate of Bismuth and Ammonia, Iodide of Potassium, and Nitrate of Silver, are of very excellent quality and standard purity. Your Committee consider the exhibition made by this firm as highly creditable, and the best in this Fair.

157. Seccomb, Kehew & Thayer, *Boston.* Oils and Candles. These are of as good quality as those exhibited by this firm at the last Fair.

411. D. M. Yeomans & Goss, *Boston.* Oils. This firm exhibit purified native lubricating oils and tallow oil, that are of the best quality, and for which the Committee recommend a *Bronze Medal.*

623. Speare, Gregory & Co., *Boston.* Oils, Wax Candles and Lard. These are all of standard quality. The caddies, or boxes for containing lard, are new, and well adapted to this purpose. The manufacturers, Messrs. Fairbank, Peck & Co., Chicago, Ill., are entitled to a *Diploma.*

687. Downer Kerosene Oil Co., *Boston.* Oils and Paraffine. The burning "Kerosene" and Paraffine exhibited and manufactured by this Company, are of the best standard quality in every respect.

The "Mineral Sperm" and "Trinidad" oils are new, and manufactured by an improved process; being free from light hydro-carbons, objectionable odor or gums, they are especially adapted for lubricating and currying purposes. For the very valuable and meritorious improvements of this Company, your Committee award a

Gold Medal.

412. CHARLES M. SPOONER & CO., *Boston.* Enamel on Leather. This is an elastic black varnish, or enamel, for use in manufacturing "Patent Leather." It is a new composition of material, possessing great advantages over anything of the kind known to the Committee, and deserving a *Silver Medal.*

Baking Japan. After years of diligent labor these exhibitors have perfected a cheap, good baking Japan, deserving a *Diploma.*

616. SAMUEL PAGE & SON, *Boston.* Patent Paraffine Varnish. An excellent covering for outside iron work, which has been noticed at former Exhibitions.

495. VALENTINE & CO., *Boston.* Standard Copal Varnishes. This firm make a good display of Varnishes by sample, and on carriages made by some of our best manufacturers. They are light in color and body, resembling to the eye those of foreign manufacture. They are commended by written testimonials from carriage builders of high reputation, and by practical coach painters, for their ease in flowing on the work, and beauty of finish. On the important point of durability of these varnishes, the Committee are not so far satisfied. This can only be proved by a longer time for wear and exposure than has been made to appear in any testimony furnished to them. The Committee feel, however, that for the improved qualities of lightness in color and ease in working, these varnishes should have this favorable notice.

246. ASAHEL WHEELER, *Boston.* Siccohast. A dryer of his own manufacture under this name. The use of this article does away with the necessity of boiling, which injures the elasticity and durability of linseed oil. *Bronze Medal.*

415. A. E. BAILEY. *North Cambridge.* Druggists' Sundries, Bear's Oil, &c. Very neatly put up.

634. SALEM LEAD CO., *Salem.* Kegs and Jars of White Lead. Both dry and ground in oil. It is a fine display, and unexception-

able in texture, color and purity. It is the only exhibition of the kind in the Fair.

831. John Mulliken & Co., *Boston.* Averill Chemical Paint; Lubricating Oils. This paint promises well.

578. Henry Wood, Son & Co., *Boston.* Colors. Marseilles Green, Chrome Green and Chrome Yellow. This firm continue their well-earned reputation as color manufacturers. The Committee feel that the award to them of a Silver Medal, at a previous Exhibition, was fully deserved.

777. F. W. Devoe & Co., *New York.* Colors. The colors made and exhibited by this firm are very fine and strong, especially the Chrome Green, Orange Chrome, Deep Yellow and Vermilion. The Committee take pleasure, in view of the superiority of these colors, and the fact that this firm have never received an award from this Association, in recommending a *Silver Medal.*

2305. Dearborn & Co., *Boston.* Perfumery. "Dew d'Andes." It is neatly packed and very agreeable.

2361. Shaw, Livermore & Co., *Boston.* Perfumery. A case of good Perfumery.

193. Samuel S. Sias, *Boston.* Improved Stuffing Oil for Leather Curriers' use. It is a good article.

423. Edward Counihan & Co., *Charlestown.* Water-Proof Composition, and Royal Crown Dressing. The former is a leather preservative, which is one of the best known to your Committee. The latter is a gloss dressing, for boots and shoes, of superior quality. These improved articles deserve a *Bronze Medal.*

877. C. L. Hauthaway & Sons, *Boston.* Blacking for Harnesses, and Peerless Gloss. For these articles your Committee award a *Diploma.*

547. William R. Warner, *North Cambridge.* Oil Polish Blacking. A serviceable and good article. It contains sufficient Neatsfoot Oil to render the leather pliable, and yet it maintains the desirable property of imparting a good and durable gloss. *Bronze Medal.*

702. Joseph A. Tilley, *Charlestown.* Hemlock-Bark Blacking —Liquid and Paste. They both produce a ready gloss and jet

black. The liquid blacking your Committee especially commend for its superiority. *Diploma.*

826. B. F. BROWN & Co., *Boston.* Liquid and Paste Blacking. The liquid blacking made by this firm, has received from the Committee a thorough comparative test, and they find that it produces and maintains a brilliant jet polish, equal to the best of foreign manufacture. It has received awards at former Exhibitions. Messrs. Brown & Co. also exhibit superior dressings for boots, shoes, &c.

10. W. E. BONNEY, *South Hanover.* Inks. Very carefully manufactured, excellent inks, of eight varieties. For a manifest improvement, the Committee award a *Diploma.*

365. H. SAWYER & Co., *Boston.* Crystal Blue. Is very good, and in a convenient package.

559. H. A. BARTLETT & Co., *Philadelphia, Pa.*, by RUSSELL STEWART & Co., Agents, *Boston.* Blacking, Bluing, and Inks. This paste blacking was noticed at the last Exhibition, and fully maintains its reputation. The bluing and inks are very good, and neatly packed; for these we give a *Diploma.*

292. ARTHUR H. BAILEY & Co., *Boston.* Groceries. The Canned Parker House soups are very nice.

610. N. BERRY & SONS, *Boston.* Spices, Coffee, Cream of Tartar, &c. A fine display of pure articles. *Bronze Medal.*

676. CARTER, MANN & Co., *Boston.* Yeast Cakes. Harmless and reliable dry hop yeast, for which your Committee recommend a *Diploma.*

700. STICKNEY & POOR, *Boston.* Mustard and Spices. The goods exhibited by this firm are of superior excellence, neatly packed, and strictly pure. The mustard has been carefully selected and prepared; it is the specialty of this firm, who, after many years of experience, have brought it to its present state of perfection. For this pure ground mustard your Committee recommend a *Bronze Medal.*

846. HENRY MAYO & Co., *Boston.* Desiccated Codfish, Cutler's Patent. This is dried codfish in a remarkably convenient, clean, and compact form. It obviates, in a great measure, the nui-

sance formerly occasioned in kitchens, when cooking salt fish. The Committee award to this invention a *Bronze Medal.*

860. REED, CUTLER & Co., *Boston.* Cooking Extracts, Spices, &c. These are known to be perfectly pure, and of the best quality.

351. GEO. H. HALL, JR., *Boston.* Glue. This is Upton & Co.'s Glue. It is of superior quality.

530. GLU-ENE MANUFACTURING Co. Glu-ene. A ready, serviceable cement, very useful in any household. It is neatly put up, always ready for use, and is worthy of a *Bronze Medal.*

304. C. E. ADAMS, *Lowell.* Two Street Lamps. These lamps have reflectors on the inside of the top, and no obstructions below to prevent perfect lighting of the ground. The inverted glass dome forming the lantern is not easily broken, and is readily replaced. The Committee award to these lamps a *Bronze Medal.*

329. QUAKER BURNER Co., *Boston.* The Quaker Burner. For burning kerosene oil. It is an ingeniously constructed burner, producing a large flame and volume of light at small cost. For this improvement the Committee recommend a *Diploma.*

371. C. E. ABBOTT, *Boston.* Kerosene Light Extinguisher. A metallic cap which covers the wick tube; it is ingenious and effective. *Diploma.*

410. EDWARD L. GILMAN, *North Somerville.* Safety Kerosene Burners. Improved, serviceable burners.

594. F. G. WILLIAMS & Co., *Boston.* Lot of Lamp Burners, Chimneys, Tea Pot, Oil, &c. Ingenious methods of heating over kerosene lamps, and the "Sun Hinge Burner," were shown by this exhibitor.

596. W. W. BATCHELDER, *Boston.* Electric Portable Drop Light. A very ingenious application, by which electricity is generated and used for lighting gas.

662. VOTAW & MONTGOMERY, *Cleveland, O.* Perkins & House's Non-Explosive Kerosene Lamp. This is a metallic lamp, constructed on correct principles, and deserving a *Bronze Medal.*

675. Automatic Gas Machine Co., *Boston.* This machine received a suitable award at a former Exhibition. The Committee noticed a tell-tale valve and regulator that have been recently added.

995. American Portable Gas Light Co., *Boston.* This machine has several advantages, and did good work during the Exhibition. The gas is cheaply made and of very good quality.

71. United States Chemical Fire Engine Co., by F. Bailey, Agent, *Boston.*

669. American Consolidated Fire Extinguisher Co., *Boston.* Your Committee know the importance of any invention which has for its object the prevention of conflagrations; but there are two competing apparatuses in the Exhibition from the above-named Companies, and no opportunity has been afforded for determining their merits.

331. A. J. Morse & Son, *Boston.* Triumph Soda Apparatus. A handsome marble exterior, having an almost perfect arrangement inside, for the reception, cooling and delivery of soda water and syrups. In this apparatus the Judges noticed and approved of the glass syrup cans, which are an important improvement, and for which they award a *Bronze Medal.*

646. G. D. Dows & Co., *Boston.* Ice Cream Soda Fountain. An elegant apparatus, and decided improvements were noticed in it. The moulding of valves from white metal, is a step in the right direction. The interior arrangements are very ingenious and praiseworthy.

479. J. F. Hudson, *East Cambridge.* Water Filters. Small reversible metallic filters, of peculiar construction.

678. William F. Tuckerman, *Boston.* Tennison's Diaphragm Water Filters. The best small filter in use.

897. James Gould, *Boston.* Fertilizer, Disinfectant, Carbola and Paint. The Fertilizer has been greatly improved in composition since the last Exhibition; it contains valuable materials, and is well adapted to the purposes for which it is recommended. Mr. Gould also deserves encouragement for his introduction of Carbolic Acid in a cheap form, as a Disinfectant and Wash. *Bronze Medal.*

945. WILLIAM L. BRADLEY, *Boston.* Bradley's Super-Phosphate of Lime, and "Sea-Fowl Guano." Since the last Exhibition of this Association, these fertilizers have been practically tested by your Committee. They are of standard quality, rich in soluble phosphate and ammonia, of great service to farmers and agriculturists, and a very valuable application of material, deserving a *Silver Medal.*

509. UNION STONE CO., *Boston.* Artificial Stone. By an entirely new process, this Company have succeeded in manufacturing emery wheels, hones, whetstones, grinding stones, imitations of soapstone, &c., that are remarkable for their strength and excellence. The composition of these articles has been examined, and for this new and useful application of material, your Committee recommend a *Bronze Medal.*

697. MIDDLESEX STONE-BRICK CO., *Boston.* Stone-Bricks. These are used for outside and inside building purposes, for which they are remarkably well adapted. In composition, strength, durability and cheapness, these bricks are better than any that have been brought to the notice of your Committee, who award for this useful invention a *Bronze Medal.*

264. MORRISON & SCHOFIELD, *Boston.* Magic Polish. For metals it is excellent.

335. EARTH CLOSET CO., *Hartford, Ct.*, by WHITE & HOWE, Agents, *Boston.* Earth Closets. Your Committee have not had good opportunities for investigating the mechanism of this apparatus; but they are satisfied of the disinfecting virtues of the dry earth, and award to this Company, for their useful application, a *Silver Medal.*

361. C. H. SHERBURNE, *Boston.* Tyler's Rubber Cement. Very good and efficient.

447. JOHN W. KINGMAN, *North Bridgewater.* Roofing Material. This method of putting on metallic roofs has advantages, and we award to the inventor a *Diploma.*

525. CHARLES G. BREWSTER, *Boston.* Minerals. A very handsome display.

531. WILLIAM HOPSON, *South Malden.* Specimens of Graining. Imitation of Oak and Maple. Also a specimen of Imitation

Marble upon Glass, covering the top of a pedestal. All of superior workmanship, and deserving a *Bronze Medal.*

Mr. Hopson also exhibits a sample of Dead Varnish, for hard wood finish.

326. Lewis Wheeler & Co., *Boston.* Tonic Sherry Wine Bitters. Very good.

887. Greene & Rogers, *Boston.* Native Wines. This firm make a specialty of introducing domestic wines.

600. B. O. & G. C. Wilson, *Boston.* Medicinal Plants and Flowers. Carefully prepared.

778. G. W. Banker, *New York.* Banker's Patent Safety Tin Can. These cans, incased in wood, have a great advantage over others, for shipping liquids, or for general use, as they may be used for any length of time without injury. For the cans, a *Silver Medal.*

Mr. Banker also exhibits Patent Kegs and Pails, made by the "Elmira Seamless Keg Co." A very ingenious and valuable invention, which, from appearance, has all the merit claimed for it. For this method of making kegs and pails, your Committee advise a *Bronze Medal.*

2209. Charles L. Fowle, *Boston.* Sponge Mattresses, Cushions, &c. The Elastic Sponge, used as a substitute for curled hair, in upholstering, has received especial attention from your Committee. It has several advantages, such as entire freedom from insect-life, permanent elasticity, and cheapness; and for this new and useful application of material the Committee award a *Silver Medal.*

2497. F. Wyman, *Boston.* Bone and Gutta Percha Work. Neatly carved watch charms.

No. 24.

FLOUR AND STARCH.

JUDGES:

SAMUEL G. BOWDLEAR, AVERY PLUMER,
ASA WADE, NATHAN CUSHING.

FLOUR.

There were submitted to the Committee, and examined by them, eight samples of Flour, numbered as follows, viz.:—398, 446, 179, 244, 395 A, 395 B, 125. The Committee decide that for all the qualities which go to make choice flour the preference is given to No. 398. They think that Nos. 395 A and 446 are particularly worthy of commendation.

398. DAVIS & TAYLOR, *Boston.* Lawrence Mills Flour.
Bronze Medal.

395. WOODWARD, BROWN & Co., *Boston..* "A" Reservoir Flour.
Diploma.

446. JOHNSON & FREEMAN, *Boston.* Greenfield Family Flour.
Diploma.

WHEAT MEAL, OR GRAHAM FLOUR.

There were three specimens, numbered 125, 398, 643. Of these the Committee decide that No. 125 is a choice article, and deserving a testimonial.

125. H. CHADBOURNE & Co., *Boston.* Graham Flour.
Bronze Medal.

WHEAT GROATS, OR CRACKED WHEAT.

There was one sample, No. 125. No comparison could be made, but the Committee think that the wheat was not thoroughly cleaned, and therefore the groats were not of the best quality.

WHEAT STARCH.

367. H. BARKER & Co., *Boston.* Wheat Starch.

There was but one sample. Very perfect in manufacture, and a superior article for laundry purposes. *Diploma.*

BREAD.

689. G. H. FALES, *Boston.* Crackers, &c.

There was one sample, No. 689, consisting of Water and Wine Crackers, and Pilot Bread. The material of which they were manufactured was of excellent quality.

No. 25.

CONFECTIONERY AND PRESERVES.

JUDGES:

George Young, Richard Briggs.

While regretting the fewness of the articles submitted for their examination, the Committee on Confectionery, Preserves, &c., feel gratified in reporting that what was lost to the Exhibition in amount was made up by excellence in quality and in general utility. For the awards in this department the following are respectfully recommended.

726. Fobes, Hayward & Co., *Boston.* Rock Candy. The case of rock candy furnished by this firm is highly creditable to the enterprising manufacturers, and for the excellence of the candy is justly entitled to a *Diploma.*

2337. John C. Zander, *Boston.* Fancy Frosted Cake. Exhibiting a remarkable degree of ingenuity and good workmanship. If the quality of the cake compares favorably with the external display of the frosting, Mr. Zander is fully entitled to a *Bronze Medal.*

2369. Frederick E. Weber, *Boston.* Frosted Cake. Specimens of elegantly ornamented frosted cake, displaying much skill and taste. As table ornaments the articles are very showy, and of much elegance, suitable for decorating banquet tables, and deserving of special notice and a *Diploma.*

515. Jorge Oyarzabal, *Boston.* Ice-Cream Server. The depositor exhibits a case containing several ingenious and very useful instruments for serving ice-cream. The utensil supplies a heretofore great desideratum, and overcomes the most troublesome impediment in expeditiously and neatly cutting and serving moulded ice-cream. The Committee recommend that for this new and ingenious as well as practically useful invention there be awarded a *Bronze Medal.*

637. Skilton, Foote & Co., *Boston.* Plain and Mixed Pickles and Catchups. A very good looking assortment. The appearance of these articles is enough to excite a first-rate appetite, and secure for the contributor a *Diploma.*

No. 26.

MUSICAL INSTRUMENTS.

JUDGES:

Theodore Chase, John K. Paine,
Joseph B. Sharland, Charles J. Capen,
Benjamin J. Lang.

The pianofortes form the larger and more important portion of the instruments exhibited. Your Committee respectfully report that each of its members made a separate trial of every instrument; that we held several meetings, and after further trial and full discussion made our awards.

We had some difficulty in reaching a conclusion by reason of the "instructions" under which we acted and by which we were governed, and to a certain extent hampered. These instructions are the same for all the judges, and on all the infinite variety of objects exhibited by the Association. We are unanimous in the suggestion, and we respectfully but urgently advise, that in future the judges of musical instruments shall either be left unfettered by precise directions as to the conditions on which their awards are to be made, or that their instructions shall be so modified as to allow them greater freedom of action. It is not possible, nor if possible would it be fair, to apply the same rules and tests to articles of an æsthetic and to those of a mechanical nature—to inventions the object of which is beauty, and to those which aim only at utility.

In conclusion, the Committee deem it proper to add that all the awards are their unanimous verdict.

We have examined the following articles, viz.:—

2130. George W. Norris & Co., *Boston.* One Piano.

2374. Olonzo A. Gamage, *Boston.* One Piano.

2375. Wilmot N. Gates, *Boston.* One Piano.

2378. The United Piano Makers, *New York*, represented by F. Zuchtmann, *Boston.* Three Pianos.

2449. Guild, Chase & Co., *Boston.* Three Pianos.

2453. T. Parsons, *Boston.* Two Pianos.

2456. G. A. Miller & Co., *Boston.* Four Pianos.

2473. A. M. McPhail & Co., *Boston.* Two Pianos.

2499. J. W. Brackett, *Boston.* One Piano.

783. E. G. Wright & Co., *Boston.* Musical Instruments.

822. Boston Musical Instrument Manufactory, *Boston.* Musical Instruments.

2342. **Samuel Pierce**, *Reading*. Organ Pipes.

2427. **Luther W. Mason**, *Chelsea*. Music Chart and Chart Mounting.

2515. **Charles Stumcke**, *Newton*. Guitars.

On mature consideration we decided to follow our instructions literally, to ignore the action of past committees, and to consider each article solely with reference to its own intrinsic merits. To this end we have held frequent sessions, and have acted throughout in a spirit of entire impartiality.

Of the pianofortes exhibited two were grands, one was a parlor grand, and the rest were squares. It is, in our judgment, matter for regret that the use of the upright piano is not more general in this country. The grand is, strictly speaking, the only piano, and all the others may be said to be more or less inferior substitutes. With its broad sounding-board and parallel strings and action, the grand piano is the sole perfect example of the class of stringed instruments with keys. The piano which most closely resembles it is the upright. Economy of space is a strong claim for its use in ordinary households: and combining as it does a large proportion of the quality of tone and action with much of the force of the grand piano, it holds unquestionably the second position in instruments of this class. The grand piano is, and must remain, *the* instrument for musicians and amateurs, but the upright might and should take the place of the square in the average use of the country. If makers would devote to the upright piano the same time and pains they now give to the others, its few remaining defects might in a short time be much modified. The public at large would certainly be the gainers, could they be induced to give it the place which the square piano now holds in their affections.

This latter instrument, as made at the present time, would seem to have reached its utmost degree of elaboration. But its sounding-board, "overstrung," as it is in a double sense, in the vain attempt to bring it to an equality with the more perfect forms of pianos, its variable system of leverage in the mechanism of its action, its bulk in proportion to its tone, all these defects are necessities of its construction, and admit of no perfect adjustment.

The grand pianoforte of Mr. **Brackett** is the most interesting of the instruments of this class examined by your Committee. It is claimed by its maker that it is the Erard piano Americanized, and that it will stand perfectly in our climate. We, however, cannot consider it as yet more than an experiment, nor, even if it be all that is claimed, that in the Erard piano is to be found the best model to follow at the present day. The quality of tone of Mr. Brackett's piano is elegant, and, though not a powerful instrument, and wanting somewhat of sonority, it has a peculiar metallic clearness of tone, which is characteristic of the Erard pianos. But these instruments do not seem adapted to our extreme climate, nor to our overheated houses. The plate is of wrought iron, the bars are of the same metal, and a section of cast or bronze metal forms the head-piece. Such a pattern does not offer the solidity required for the modern piano. There is not metal enough in it to properly resist the shock of a powerful action. The respective merits of wrought and cast iron are still to some extent an open question, but it is the judgment of your Committee that, perfect as Mr. Brackett's piano is, considered simply as a copy of Erard, it is based on a wrong principle.

The theory of the modern piano is to employ the material which will best resist the shock of the hammer, and cause the string to give out only a pure, full sound. Hence the rule of great solidity is the basis of construction. The end of the frame near the striking-point of the hammer cannot possess too much firmness and resisting power. The cast-iron frame with its solid bars is the only one which will afford all the qualities of tone required at the present time. In exemplification of this, it is to be noted that at the last French Exhibition, although it is true that Erard was not represented, the American pianos of solid iron frames, there thoroughly tried, were generally held to be an advance on anything yet made, in the qualities now considered essential in such instruments.

Something more is needed than a pure tone,—and that is, a tone pure, but having within itself all the elements of sonority and power when required. The wrought frame lacks these last qualities just in proportion as it lacks comparative weight. In the lower half of the scale, as the tones become broader and slower in vibration, the importance of this great element of solidity somewhat diminishes, and it may be noticed that these lower tones are much alike in all first-rate pianos. But in the upper, the singing half of the scale, the solid frames give a fulness and sonority, a nobility and richness of tone which is and must be wanting in the wrought-iron frames.

And, finally, all experience seems to show that no piano will stand in tune the year through at full pitch as well as those of the solid cast-iron frame construction.

In view of the above considerations on the one hand, and taking into account on the other the merits of Mr. Brackett's piano as an instrument of its particular class, the Committee recommend that there be awarded to J. W. **Brackett** for his Grand Piano No. 2038* a *Silver Medal.*

To the **United Piano Makers** *of New York*, represented by F. **Zuchtmann**, for their Grand Piano No. 1937, a *Bronze Medal.*

To A. M. **McPhail** & Co., for an excellent Square Piano, No. 10,004, a *Bronze Medal.*

To **Guild, Chase** & Co., for a Square Piano, No. 700, a *Diploma.*

To G. A. **Miller** & Co., for a Square Piano, No. 1522, a *Diploma.*

Mr. **Luther** W. **Mason** exhibits Music Charts and Chart Mounting. These show a marked improvement in grading, and are of great value for educational purposes. *Silver Medal.*

Samuel Pierce. Organ Pipes. Well made and of beautiful metal. *Bronze Medal.*

Charles Stumcke. Guitars. *Bronze Medal.*

Boston Musical Instrument Manufactory. A case of Musical Instruments. *Silver Medal.*

No. 27.

FINE ARTS AND PENMANSHIP.

JUDGES:

Rev. Charles H. Leonard,
John Howarth,
Edward L. Wilson,
Alfred A. Childs,
Henry D. Morse,
James Hovey.

690. **Martin Milmore**, *Boston.* Marble Bust of Hon. Charles Sumner. By far the best work of art in the Exhibition; finely modeled and moulded; singularly flexible and expressive in feature; shows careful handling and insight of character, and is worthy the highest award. *Gold Medal.*

231. **John C. King**, *Boston.* Cameos. Well cut. *Diploma.*

489. J. **Carew**, *Boston.* Marble Tablet and Figure. *Diploma.*

2081. A. **Ruth**, *Boston.* Meerschaum Pipes. Many of them well cut, and a few quite spirited in design. *Diploma.*

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* The numbers are those on the pianos, not those in the catalogue of the Exhibition.

519. James T. Hill, *Boston.* Oil Paintings. Show talent and study.

910. Thomas C. Savory, *Boston.* Case of Banners. Superior in design and execution. *Silver Medal.*

2262. Charles O. Eaton, *Boston.* Regimental Colors. Very well painted. *Diploma.*

33. L. Prang & Co., *Boston.* Collection of Chromos. Especially to be commended for superior workmanship. *Silver Medal.*

940. New England Lithographic Co., *Boston.* Specimens of Lithography. Excellent. *Silver Medal.*

2099. Charles H. Crosby, *Boston.* Chromo Lithographs. Very fine. *Silver Medal.*

Photography.

The contributions to this special department were so scattered that the work of examination was rendered difficult. If all the photographs had been located together much time would have been saved the Committee.

219. Thomas Gaffield, *Boston.* Photographic Self-Prints from Nature. These are rare specimens, the result of many original experiments with leaves of different colors. Mr. Gaffield's investigations open an interesting field for the student of nature. *Bronze Medal.*

647. T. R. Burnham, *Boston.* View of the United States Capitol, and specimens of plain Photography. Very good.

651 and 2115. John A. Whipple, *Boston.* Photographs. All of them show excellent work. The pictures of large groups are especially fine, the best of their class. Mr. Whipple's peculiar method of taking such groups is valuable in the art, and worthy of great praise.

The most striking examples by Mr. Whipple are his pictures of the late Solar Eclipse. The views of the Corona and the Protuberances are probably finer than any others that were secured of the great phenomenon; and in consideration of the difficulties surmounted in making these pictures, as well as their excellence as photographs, the highest award is recommended.

Gold Med

810. H. G. SMITH, *Boston.* Copies of Statuary and Engravings. Work of superior excellence. *Bronze Medal.*

843 and 2114. J. W. BLACK, *Boston.* The *average* plain, that is, untouched, uncolored work, the best on exhibition, showing richness, rotundity, delicate half-tone and good posing.

The most noteworthy specimens in Mr. Black's collection are the Views of the Coast of Labrador and the Icebergs. They were probably taken farther North than photography ever before reached. The difficulties attendant upon working in such a latitude, which Mr. Black seems to have overcome, and the general excellence of the pictures as specimens of the art, entitle them to the highest award. *Gold Medal.*

2425. E. L. ALLEN, *Boston.* Photographs. Very fine specimens of photographic art; showing great artistic skill and care, rarely if ever excelled. *Silver Medal.*

2443. G. H. LOOMIS, *Boston.* Photographs. Out-door work, very nice. The pictures of Glass ware of peculiar excellence. In this kind of work, Mr. Loomis has an original method by which he secures excellent results. *Bronze Medal.*

83. GEORGE K. PROCTOR, *Salem.* Invention for Making Pictures by Magnesium Light. Very valuable, and a real contribution to photographic art. *Silver Medal.*

960. CHARLES BIERSTADT, *Niagara Falls, N. Y.* Niagara Stereoscopic Views. *Diploma.*

103. ALBAN ANDRÉN, *Boston.* India Ink Drawing of Locomotive. Well drawn and colored. *Bronze Medal.*

2034. GEORGE E. JONES, *Boston.* Pen and Ink Drawing, "Ivy Green." Nicely done. *Diploma.*

2076. FRENCH, BILL & CHAMBERLAIN, *Boston.* Specimen of Penmanship. Excellent *business* hand. *Diploma.*

No. 28.

PRINTING, BINDING, AND BOOKS.

JUDGES:

NATHANIEL B. SHURTLEFF,	A. K. P. WELCH,
ORRIN F. FRYE,	CHARLES DEANE.

The Committee on Printing, Binding, and Books, to whom was assigned the examination of articles in the Fair submitted for premiums, having made the necessary inspection, respectfully recommend awards in relation thereto according to the best of their judgment.

Except for articles of uncommon practical utility, the Committee have avoided recommending awards for specimens, when their contributors have already received high prizes for similar productions of skill and workmanship in previous Exhibitions of the Association. By so doing, undoubtedly greater encouragement will be given to the generality of persons who have submitted their work, than if a continuance of the highest awards should be made for a similar exhibition of articles by those who have been previously rewarded with the high Medals, however meritorious the specimens in the present Fair may be.

Notwithstanding the number of articles in the department entrusted to your Committee, the competition has not been great, the variety of the species of objects greatly surpassing the numbers of any one kind of invention or improvement. The printing presses have been few in number, but all good in kind and in their peculiar departments of work. The same may be said of the printed books and specimens of binding, of which many marks of excellence were noticed. In die-cutting and stamping the exhibition has been rich, and all the contributors deserve much credit for their ingenuity and for the workmanship produced. The specimens of job printing were uncommonly good.

The following list comprises all the articles submitted to the Committee, and accompanying each is the award recommended for your consideration.

177. SMITH & PORTER, *Boston.* Specimens of Printing from Type. These are all from type,—letters and borders,—and reflect great credit for their neatness, and for the skill of the printers. The Committee think they deserve the award of a *Bronze Medal.*

443. T. R. Marvin & Son, *Boston.* Dry Goods Tickets, and Colored Printing from Wood Cuts. The contributors exhibit a considerable variety of specimens of work, very useful for Dry Goods. These exceed in excellence of workmanship, and in variety of style, the articles submitted at the last Fair. The Committee consider, that for the improvement since the last Exhibition and for new peculiarities, the invention of the contributors, there should be awarded a *Bronze Medal.*

677. H. O. Houghton & Co., *Riverside Press, Cambridge.* Specimens of Book Printing and Book Binding. Nine of these volumes are exhibited as specimens of printing, and eight for the binding. In both particulars the workmanship is admirable, and worthy of imitation. These specimens were exhibited in Paris at the Exposition, and obtained there a bronze medal for their excellence. The Committee recommend the same award here.

Bronze Medal.

746. Alexander Moore, *Boston.* Specimens of new magazine, "Good Health," and of Bookbinding. Some of the binding is very excellent, and the magazine makes a very creditable appearance. For the binding the Committee recommend the award of a

Diploma.

862. Sophie P. Woods, *Boston.* Specimens of Amateur Printing. These were executed on the "Novelty" presses, and reflect much credit for good taste and skill, and exhibit very favorably the quality of the work capable of being produced by the machine.

943. William L. Morgan, *Boston.* Mathematical Composition. Most admirable work, displaying much skill and good judgment on the part of the compositor.

225. Russell & Richardson, *Boston.* Specimens of Wood Engraving. The engraving is printed in colors, and is worthy of great commendation for the excellence of the work and the superior skill displayed in toning the colors. The engraving is superior and the printing very excellent. The Committee recommend the award of a *Bronze Medal.*

738. J. L. Taylor, *Boston.* Engraving on Wood. Very creditable work for the artist.

2158. F. Hedge [illegible] Wood Engraving. Exceedingly well done. The [illegible]mend a *Diploma.*

2373. LOWELL & BRETT, *Boston.* Cases of Monograms and Cards. In these cases are exhibited very remarkable specimens of taste and good workmanship. Much of the work, as shown in the illuminated cards and monograms, is peculiarly the invention of the contributors, and is not performed elsewhere. Many of the specimens are in various colors, struck two or more times from the same die. The perfection is mainly due to the great skill and excellent taste of the contributors, and to the admirable presses, the invention of the same persons, which are used in producing the pleasing effect. The Committee recommend a *Silver Medal.*

771. THOMAS GROOM & CO., *Boston.* Case of Account Books. These specimens keep up the character which the firm have attained in former Exhibitions, where they obtained high prizes. The Committee recommend the award of a *Bronze Medal.*

903. GEORGE COOLIDGE, *Boston.* Exhibition Catalogue and Journal. Invaluable during the Fair as an index to the articles exhibited. This year Mr. Coolidge has made his catalogue more useful than previously by giving a double index to the specimens; first an index of things received numerically, and second an official catalogue by sections, so that every article could be readily found—an advantage over former and all other catalogues which was pretty fully appreciated by the judges of the various departments. The Committee recommend for this contribution, and the improvements over all other catalogues of the kind, a *Bronze Medal.*

129. BENJAMIN O. WOODS, *Boston.* Four Novelty Job Printing Presses and Seven Novelty Type Cases. These presses are very compact, well made, easily operated and inexpensive. For country job offices, amateur printers, apothecaries, seedsmen and for persons requiring a large number of labels which they desire to print for themselves, the Novelty press is a very desirable machine, as it occupies very little room, is easily comprehended, and can be skilfully and rapidly operated by any person of common intelligence with little practice. Mr. Woods deserves much credit for his ingenuity in producing so perfect a hand job press in so compact a form. Therefore the Committee recommend the award of a

Silver Medal.

The Type Cases are ingeniously constructed, and are very convenient for small fonts of type, such as are used by bookbinders and amateurs.

714. Jones Manufacturing Co., *Palmyra, N. Y.*, by Phelps, Dalton & Co., *Boston.* Globe Job Printing Press. The Committee do not hesitate to pronounce the Globe Job Printing Press to be the best job press yet offered in the market for sale. It has several new principles which other presses of the kind do not have; among which is the "throw off," an advantage which is almost indispensable, and will be readily appreciated by all printers. It possesses a new mode of giving the impression, by which a "dwell" is obtained when the form has touched the sheet, thereby securing a more perfect impression than can possibly be obtained by the old method by crank movement. The detention of the rollers on the cylinder at the will of the operator, without stopping the machinery, thereby giving extra facilities for distribution of the ink, is a new feature in job presses, the want of which has been felt by pressmen for years, but never until now has this great desideratum been accomplished. There are other points, of more or less importance, which render this a most desirable press, and, in the opinion of the Committee, the most perfect yet presented to the notice of printers. They therefore recommend the award of a *Gold Medal.*

902. J. E. Hodgkins, *Boston.* Montague's Newspaper Press. This press possesses certain advantages that deserve special mention and commendation. It is simple in construction, easily understood and operated, compact in form, and can be worked at a high rate of speed. It has superior arrangements for the regulation and distribution of ink; and considering all these things, and the price at which it can be furnished, it is especially desirable for a country printing office. Another great point in this press, and which it is believed is possessed by no other cylinder press, is the "throw off," which is perfectly under the control of the feeder. By this arrangement jobs requiring extra rolling can be run twice under the inking rollers without interfering with the motion of the press; and if an inexpert or careless feeder lets a sheet go in not properly gauged, the impression can be thrown off and the sheet thereby saved. This attachment is of the greatest importance. This press has another great advantage over most of the other presses now in use, namely, in the ease and rapidity with which it can be worked by hand power, making it very desirable for such printing offices as do not have constant work for a press of this size, but still are obliged to have one on hand. The Committee recommend the award of a *Silver Medal.*

152. Wm. H. & C. J. Young, *Cambridgeport.* Printer's Guide,

or Copy-Holder. A very ingenious contrivance for the compositor, and undoubtedly would be much appreciated by workmen.

232. George J. Sutton, *Cambridgeport.* Composing Stick for Printers' use. A very ingenious instrument; and, being easily adjusted, is convenient for a country job office and for amateur printers.

592. John M. Eaton, *Charlestown.* The Dexter Composing Stick. Eaton & Welsh, the proprietors of this instrument, have produced a very convenient instrument for job printers. It is easily adjusted, and holds its measure firmly without being displaced by use. The old-fashioned screw and clasp are dispensed with, the fastening being done by a lever, and this being less than type high a proof can be taken from the matter without removing it from the stick. This is worthy of a *Diploma.*

631. Hayden & Pray, *Boston.* Thing's Patent Composing Sticks. These are undoubtedly very useful in small job offices, where sticks that can be easily and expeditiously adjusted are needed.

312. J. H. Osgood, *Boston.* Elastic Composition for Printers' Rollers. The Committee had no opportunity for testing this article, but judge from its appearance that it may be good for its intended purpose.

544. Eagle Printing Ink Works, *Boston.* Kegs and Cans of Printing Ink. This ink has a good reputation, and the specimens in the Fair are neatly put up. For superiority and cheapness, a *Silver Medal.*

240. American Tablet Co., *Boston.* Specimens of Erasable Tablets. Very useful and excellent articles. They are worthy of a *Diploma.*

243. H. E. Forrest, *Boston.* Improved Paper Dampener. This contrivance for the purpose of lessening the labor of letter copying is very ingenious, and will, on account of its convenience, be much used by business men for the ready copying of correspondence.

770. Byron Weston, *Dalton.* Account Book, Note and Writing Paper. The specimens are very superior for their quality and appearance. They possess toughness, strength and durability,

and are free from all acid, earthy and mineral substances that can injure their texture. Mr. Weston's paper can compete with any of English manufacture, equally in point of quality, finish and color. Therefore the Committee recommend the award of a

Silver Medal.

734. C. C. CHILD, *Boston.* Montague's New Acme Paper Cutter. This is believed, after a very thorough examination, to be the best machine for its price in the market. Among its advantages are the following:—1. The clamping and cutting is all done with one operation, the "clamper" adjusting itself, both in height and pressure, to the paper to be cut, securely fastening it during the process of cutting, and dispensing with any attention on the part of the tender, and thus saving much time. 2. The "Gauge" by which the size of the cut is regulated, is fixed in its position by a steel band revolving on a wheel directly in front of the operator. On this steel band are marked the exact inches and fractions of an inch between the gauge and the knife, thereby enabling the workman to regulate to a hair the size to which he desires to cut his paper or books, without going through the usual required tedious process of shifting his gauge and clamp several times before the exact adjustment is obtained. This last arrangement will be readily appreciated by every one at all familiar with paper cutting machines. The steel band is also much more easily and speedily operated than the screw and crank in use in other machines. 3. The cheapness, in comparison with other machines, is a noticeable feature, and in connection with its other advantages, commends it to the favorable notice of printers and bookbinders. The motive power is very great and complete, and the machine can be operated with great rapidity. The Committee recommend as a proper award, a

Silver Medal.

16. WILLIAM P. CHASE, *Boston.* Specimens of Lettering and Stamping. Very excellent work on leather, showing much skill in book lettering and embossing. The Committee recommend a

Diploma.

76. POWER & CLELAND, *Boston.* Steel and Stencil Letter Cutting, Seal Presses, &c. These specimens are very excellent, and richly deserve the award of a *Bronze Medal.*

192. WILLIAM F. SPEAR, *Boston.* Specimens of Die Cutting. These are the first specimens of the kind ever exhibited at the Fairs of the Association. Their use is chiefly for ornamenting and

lettering books, and they are of superior workmanship. They are worthy of a *Bronze Medal.*

399. WILLIAM H. H. DAVIS, *Boston.* Hand Stamps and Seal Presses. The hand stamps are new and convenient instruments, designed chiefly for marking shoe-cases, and as such are labor-saving. The presses are convenient and excellent. The Committee recommend for the hand stamps the award of a *Bronze Medal.*

408. GEORGE JACOBS, *Boston.* Stencil Tools, Seals, Presses, &c. These are very excellent tools, and admirably adapted to their purpose. They should have, in the opinion of the Committee, a *Bronze Medal.*

493. WILLIAM H. SMITH, *Boston.* Seals, Dies, Steel Letter Cutting and Stencil Plates. Mr. Smith has in previous exhibitions contributed much excellent work. This year his specimens excel those in former Exhibitions, and in the opinion of the Committee, should have a *Bronze Medal.*

549. FREDERICK SMALL, *Boston.* Ribbon Hand Stamp and Embossing Presses. These articles are well known, being much in use, and adapted to many useful purposes. They certainly should receive a *Diploma.*

754. FREDERICK E. PHELPS, *Boston.* Case of Steel Stamps and Dies. Of most excellent workmanship. Worthy of a *Diploma.*

802. W. B. GORHAM, *Boston.* Case of Hand Stamps with Copper-Faced Types and Indelible Ink for marking clothes. A very excellent article for the intended purpose, and very convenient for use. Arranged so as to be easily adapted to all purposes where indelible ink is used for marking, and can be used with printer's ink.

2104. ANDREW S. BIGGAR, *Ballard Vale.* Show Cards and Tags. Very useful articles, and executed with much taste and skill.

2336. CHARLES W. CRANE, *Boston.* Show Cards. Very neatly executed.

No. 29.

SHOE TOOLS AND MACHINERY.

JUDGES:

Charles Adams, Jr., W. Fisk Claflin,
George W. Keene, N. P. Coburn,
Horace M. Bearce.

On entering upon the duties assigned to them, your Committee found a great variety of useful articles presented for examination, and after a careful investigation of the merits of all the tools and machinery in our department, we respectfully submit the following Report.

The machinery exhibited is, as a whole, of a high order, showing decided progress in this branch of industry, and some of recent invention is of great utility, and shows marked features of improvement.

Most of it was in practical operation, representing well the wonderful strides made by our inventors in producing machinery that has, within a few years, almost wholly revolutionized the process of manufacturing boots and shoes, and which has given to this department of manufacture, both in its amount and in its diffusive benefits to the people, a place second to no other among the industrial interests of the Commonwealth, and placed this branch of machinery in advance of that of any other country.

50. John G. Busfield, *Hudson*. Power Machine for trimming Boot and Shoe Heels. *Bronze Medal.*

56. C. F. Davis & Co., *Marlborough*. Power Sole-Leather Cutting Machine. Adapted to cutting soles, upper leather, lastings, linings, card board, &c. Simple in construction, and works to complete satisfaction. We regard it a very valuable invention, and worthy of a *Silver Medal.*

77. Henshaw Bros. & Co., *Boston*. Shoe Findings and Shoe Manufacturers' Goods. Fine display of useful articles.

98. John Jennings, Jr., & Son, *Natick*. Shoe Knives and Shaves. Good articles.

108. H. S. Dawes, *Hudson*. Cutting Dies for Shoes. Well finished.

150. PARKER, HOLDEN & Co., *Woburn.* Boarding and Graining Machine. *Diploma.*

168. WILLIAM H. SWEETLAND, *Marblehead.* Shoe Jack. A very good article.

178. EXLEY & PARSONS, *Marlborough.* Boot and Shoe Heel Press. A well made and useful machine. *Diploma.*

189. T. D. BAILEY, *Lowell.* Two Head Blocks for Jacking Lasts. Useful machines.

198. EDWIN REED, *Kingston.* Patent Machine for Trimming and Pressing Welted Seams. Useful machine.

215. GEORGE W. TOWNSEND, *Boston.* Case of Lasts. Good style and highly finished.

338. CHARLES VARNEY, *East Brimfield.* Pegging Machine with Bench. Remarkable for simplicity of construction, and neat and thorough execution. *Bronze Medal.*

340. MICHAEL MEADE, *Boston.* Patent Reliable Scale and Graduating Patterns for Cutting Boots. Useful invention.

381. N. J. SIMONDS, *Woburn.* Leather Cutting Machine. This machine embraces some new features. It is excellent for cutting thin leather. *Bronze Medal.*

402. S. W. CHAMBERLIN, *Stoneham.* A Heel Burnishing Machine. *Diploma.*

424. MCKAY HEELING MACHINE COMPANY, *Boston.* Machine for Nailing and Shaving Heels. An invention of great merit. It is working a radical change in heeling boots and shoes. The Committee award it a *Gold Medal.*

541. BLANCHARD & LAVERS, *Boston.* Boot and Shoe Cutters or Dies, for cutting Leather, Rubber and Paper. A very complete collection, and very fine workmanship. *Silver Medal.*

545. AMERICAN LEATHER PEG Co., *Boston.* Condensed Leather Peg, and Machine for manufacturing Boots and Shoes. *Bronze Medal.*

587. Phinney & Phillips, *Boston.* Shoe Tools. Fine display of useful articles. *Diploma.*

613. J. F. Woodward & Co., *Wakefield.* Case of Awl-Blades and Shoe Tools; Head Block. Very fine articles, and well arranged.

683. M. & J. Hobbs, *East Brookfield.* Curtis' Improved Sole Cutting Machines, Power and Foot. *Silver Medal.*

686. O. H. & J. A. Marston, *Stoneham.* Improved Heel Machine for fitting Boot and Shoe Heels. *Bronze Medal.*

717. D. Whittemore, *Boston.* Pegging Machine; Heel Machine; Wax Thread Sewing Machine. The latter, a machine of great merit. A decided improvement. *Silver Medal.*

735. Hartford & Gallup, *Boston.* Brass-Edged Shoe Patterns. Very well made.

779. Franklin Reed, *Canton.* Power Welt and Seam Rolling Machine. *Diploma.*

784. William Butterfield, *Boston.* Wax-Thread Sewing-Machine; Screw-Wire Nailing Machine and Fixtures; Hand Screw-Wire Nailing Machine; Eyeletting Machine; C and D Wax-Thread Machines; New Era Pegging Machine; Hand Channeling Machine; Heel Trimmer, Helm's Patent; Welt Knife, Farren's Patent; Helm's Patent Counter Skiver; Cable-Wire Lasting Machine. Prominent in the above collection is a power and hand screw-wire Nailing Machine, a late and important invention, for which the Committee recommend a *Gold Medal.*

To the same, for the New Era Pegging Machine, a *Bronze Medal.*

896. L. D. Hawkins, *Boston.* Punch for punching string-holes in Boots and Shoes; Revolving Die Sole-Cutting Machine, Heel-Press and Moulder combined; Foot-Power Revolving Die Sole-Cutting Machine; Rolling Machine; Power Sole-Leather Stripping Machine; Leather Splitting Machine; Sand Paper Machine for finishing bottoms of Boots and Shoes. The machines exhibited by Mr. Hawkins are of undoubted merit. The Committee recommend the following awards:

For a Revolving Die Sole-Cutting Machine, Heel-Press and Moulder combined, a *Silver Medal.*

For a Power Stripping Machine, and a Leather-Splitting Machine, a *Bronze Medal.*

991. American Wire Quilting Machine Co., *Boston.* Wire Quilting Machine. A very simple and practicable machine. By its use, Boot and Shoe soles and taps are rendered twice as durable as the ordinary ones. The Committee recommend a *Silver Medal.*

994. Tripp, Eddy & Co., *Boston.* Rolling Machines, large and small; Buffing Machine; Sole-Dieing Machines—Revolving Die, Power and Foot; Hand Rolling Machine; Leather-Stripping Machine; Shank Cutting Machine; Counter Skiving Machine; Sole Press, and case of Shoe Dies.

The above comprises a collection of very useful machinery. The Committee award a *Silver Medal.*

No. 30.

ORNAMENTAL AND PLAIN NEEDLE-WORK.

JUDGES:

Mrs. S. T. Hooper,	Mrs. John Wallace,
Miss Sarah C. Brewster,	Miss Emma J. Standish,
Miss Sarah E. Simpson,	Mrs. Charles T. Tilton,

Mrs. George B. Osborne.

The Committee on Needle-Work, Embroidery, &c., have examined with much care the articles submitted to them, and exceedingly regret that the display of needle-work should have been so meagre. Very few articles deserve special commendation, there being nothing new in design or execution, which can only be accounted for by the frequent opportunities afforded by Fairs for charitable objects.

The display of Wax Work, which was referred to the Committee, has received merited attention.

The Committee have endeavored, in the awards which they now submit, to do justice to all the contributors.

2023. Miss Sarah A. Blandin, *Charlestown.* Case Wax Flowers, and Wax Cross. Neatly done. *Diploma.*

2044. Mrs. A. W. Cushman, *Boston.* Wreath; Natural Flowers preserved in Wax. Much taste displayed and beautifully done. *Silver Medal.*

2112. Mrs. Charles G. Willey, *Peabody.* Autumn Leaves in Wax, and Wax Cross. Artistically arranged. Workmanship fine, and true to nature. *Diploma.*

2128. John L. Whipple, *Boston.* Case Wax Flowers. Good taste and workmanship. *Diploma.*

2152. Mrs. J. A. Hinkley, *Boston.* Wax Cross. Beautiful in design and workmanship. *Diploma.*

2159. Mrs. A. H. Hurd, *Boston.* Wax Vase, with Wax Flowers. Finely done. *Diploma.*

2185. Mrs. J. A. Rollins, *Charlestown.* Wax Cross. Neatly made.

2231. Miss A. M. Elliot, *Boston.* Natural Flowers preserved in wax. Beautifully made. *Diploma.*

2245. Mrs. L. Tilton, *Boston.* Basket Wax Flowers; Autumn Leaves. Very nicely made.

2281. Miss S. Abby Haynes, *Dorchester.* Wax Flowers. In good taste and neatly made.

2297. Mrs. L. R. Springer, *Boston.* Three cases Wax Work, Wax Flowers, and a Drawing. Each deserving merit. *Bronze Medal.*

2332. Miss Mary F. Gorham, *Boston.* Wax Cross. Exquisitely done. *Bronze Medal.*

2338. Mrs. Elizabeth McKenzie, *East Boston.* Wax Cross and Wreath. Pretty design and neatly executed.

2386. Mrs. Hannah R. Loring, *Wakefield.* Autumn Leaves in wax. Arranged with taste and neatness. *Diploma.*

2416. Miss E. L. Goodale, *Boston.* Case Wax Work. Superior workmanship. *Silver Medal.*

2423. Mrs. L. W. S. Foss, *East Cambridge.* Wax Cross. Very pretty.

2005. Hattie A. Rogers, *Charlestown.* Toilet Cushion and Watch-Case. Neatly made.

2176. Mrs. Darius Fenn, *Boston.* Three Watch-Cases; two Bead Cushions. In good taste.

2021. Charles Neal, *Boston.* Worsted Picture,—A Ship. Great industry and patience shown.

2068. Edward A. Vose, *Boston.* Two Worsted Pictures. Remarkably well done under the circumstances. *Diploma.*

2083. Mrs. George A. Pillsbury, *Charlestown.* Worsted Picture. Well executed. *Diploma.*

2191. Miss Annie R. Hodges, *East Boston.* Worsted Flowers. Well done for a child of eleven years.

2046. Miss Susie C. Clark, *Cambridgeport.* Java Canvas Tidy. Beautifully made. *Diploma.*

2236. Geo. W. Gallison, *Boston.* Sofa Tidy. Made by a boy sixteen years old. Pretty in design and well executed.

2460. Mrs. D. Baker, *Melrose.* Two Netted Tidies. Prettily designed and well made, by a lady of 72. *Diploma.*

2041. Mrs. Rodney Brown, *Boston.* One Affghan. Immense piece of work, requiring great patience and industry. *Diploma.*

2129. Mrs. W. F. Davis, *Boston.* Affghan. An exhibition of merit as to workmanship, deserving a *Diploma.*

2343. Miss Mary A. Adams, *Portsmouth, N. H.* Affghan. Neatly and tastefully made.

2411. Mrs. S. B. Hamlin, *Boston.* Two Affghans. Very nicely made. *Diploma.*

2024. Mrs. C. J. Dale, *Boston.* Two Rag Rugs. Beautifully made. *Diploma.*

2237. Mrs. Adelaide Lord, *Charlestown.* Rag Rug. Handsome pattern and beautifully made. *Diploma.*

2384. Mrs. J. F. McDuffie, *Rochester, N. H.* Rag Rug. In good taste and beautifully made. *Diploma.*

2451. Mrs. J. E. Hobbs, *East Cambridge.* Rag Rug. Neatly made and in good taste. *Diploma.*

2489. Mrs. B. F. Wheeler, *Rockport.* Three Rag Rugs. Ingeniously designed and very well made. *Diploma.*

2154. Miss E. Holland, *Boston.* White Knit Quilt. Beautifully knit, in 564 pieces, with 189 tassels, and deserves a *Diploma.*

2177. Mrs. A. M. Winsor, *Boston.* Silk Quilt. Neatly made.

2200. Mrs. Margaret Marshall, *Boston.* Silk Quilt. Is composed of 3,000 pieces, and is neatly made, by a lady aged 72. *Diploma.*

2428. Mrs. Martha A. Haskins, *Boston.* Silk Quilt. Beautifully quilted.

2464. Mrs. J. W. Sulloway, *Waltham.* Silk Quilt, and Bible Cushion. Prettily arranged and neatly done. *Diploma.*

2264. Belle Starbird, *Malden.* Patch-Work. Neatly made by a child of four years, showing industry and patience. *Diploma.*

2316. Charles M. Tyler, *Lynn.* Patch-Work Quilt. Neatly made.

2412. Mrs. W. A. Coan, *East Boston.* Patch-Work Quilt. Elaborate piece of work. *Diploma.*

2495. Eva A. Taylor, *Cambridgeport.* Patch-Work Quilt. Showing great industry and perseverance for a child. *Diploma.*

2409. Mrs. W. M. Fisher, *Boston.* Velvet Bed-Spread. Original in design and exceedingly pretty.

2302. Mrs. M. C. Gavett, *Boston.* Velvet Pianoforte Cover. Ingeniously arranged and neatly made.

2306. Mrs. Athe[illegible]n Pratt, *East Weymouth.* Carriage Robe. Deserves notice for the labor bestowed upon it.

2431. Miss C. A. Howe, *Boston.* Bead-Work Cricket. Very handsome. *Diploma.*

2007. Elizabeth S. Cundy, *Boston.* Horticultural Wreath. Cleverly arranged, showing much patience.

2027. Miss Susie A. Hazlett, *North Wrentham.* Seed Wreath. Novel work and nicely made. *Diploma.*

2037. Miss Hattie Marston, *West Medway.* Raisin Stone Card Basket. Curious and pretty.

2113. Mrs. Ruth H. Ingersoll, *Somerville.* Shell Frame. Neatly done.

2385. C. B. Townsend, *East Boston.* Fancy Frame. Ingeniously made.

2249. Miss M. Ellen Eddy, *East Somerville.* Two Embroidered Flannel Skirts; Infant's Blanket. Superior work. *Diploma.*

2282. Mrs. J. R. Wasley, *Boston.* Four Pieces of Embroidery. Elegant in design and finish. *Bronze Medal.*

2300. Mrs. Delmont Locke, *Arlington.* Embroidered Flannel Skirt. Very nicely done. *Diploma.*

2253. Miss Eliza A. Newman, *Wakefield.* Two Flannel Skirts. Very nicely done. *Diploma.*

2350. Miss Laurette M. Wilde, *Boston.* One Shirt. Made by her when 5½ years old. Very well made. *Diploma.*

2111. Miss C. M. Patterson, *Nashua, N. H.* One Pair Cotton Hose. Beautifully knit. *Diploma.*

2155. Miss Carrie Fissell, *Charlestown.* One Pair Cotton Hose. Very fine and of superior workmanship. *Diploma.*

2325. Thomas Wilkins, *Dorchester.* Box "Chines

2430. W. H. Nicholson, *Dorchester.* Case Imitation Hair. Good imitation of the human hair. *Diploma.*

2339. D. B. Saunders & Co., *Boston.* Corsets. Beautiful workmanship. *Bronze Medal.*

2309. M. F. Goodwin, *Boston.* Ladies' Cutting Board. Conveniently and tastefully made. *Diploma.*

2370. Mrs. B. A. Stearns, *Acton Centre.* Diagram for Cutting Dresses for Ladies and Children. For her ingenuity and perseverance deserves a *Silver Medal.*

2434. Jordan, Marsh & Co., *Boston.* Case Millinery Goods, Dresses, &c. All deserve a favorable notice for taste and ingenuity, as well as superior workmanship. *Silver Medal.*

⁂ As a full catalogue of all the articles entered was published and extensively circulated during the Exhibition, the editor was directed generally to omit mention of all contributions not commented upon by the Board of Judges.

DESCRIPTION OF THE DIPLOMA.

DESIGNED BY HAMMATT BILLINGS, AND ENGRAVED ON STEEL BY S. A. SCHOFF.

In the centre, upon a high dais, stands Pallas, (Minerva,) holding in her right hand a wreath, and with her left resting upon a shield bearing the insignia of the State of Massachusetts, at her left hand is Justice, pointing out those worthy of the rewards of Skill and Industry; and on her right sits a Scribe recording their names.

On the left of the principal group a procession of artisans approach, with specimens of their handicraft, as candidates for the prizes; on the right, corresponding to these, are figures representative of the Fine Arts, Music, etc.

The back ground is occupied by an Exhibition Hall, filled with various objects of manufacture, and a crowd of visitors.

In the centre, below the principal figures, is the crest of the Association.

THE LEVEE.

THE GOVERNMENT OF THE ASSOCIATION, desirous of testifying their appreciation of the services rendered by the Board of Judges who had been selected to examine and report upon the various articles contributed to the Eleventh Exhibition, extended to them an invitation to meet the Government, together with a portion of the Contributors, and a few other invited guests, at a Levee, which was held at the Revere House, on Thursday evening, October 7th.

Some three or four hundred gentlemen were assembled, and, after passing an agreeable social hour in the pleasant drawing-rooms of the "Revere," in mutual introduction and congratulations, the party were ushered into the dining-room, where a generous banquet had been provided.

Assembled at the hospitable board, the company was welcomed by the President of the Association, JONAS FITCH, Esq. [illegible] address, in the following terms:—

ADDRESS BY PRESIDENT FITCH.

GENTLEMEN:—It is customary, at some time during an Exhibition of American Manufactures and Mechanic Arts, held under the auspices of the Massachusetts Charitable Mechanic Association, for the Government, recognizing the arduous labors of the Board of Judges in the performance of the duties entrusted to them, to invite them to meet together and to pass an hour or two in social converse, and also to partake of such entertainment as might seem appropriate. I am glad to welcome you, therefore, on this occasion, and to thank you in behalf of the Association for your kind response to our invitation to act as our Committee of Examination. The duty is not always one of thanks, but I trust that on this occasion it has not proved altogether an unpleasant task.

We are happy, also, to greet some of our Contributors, to all of whom we are greatly indebted for the interest they have manifested in the success of our Exhibition. The large number of new and important inventions, not only shows that the inventive genius of our people has not diminished, but that such an Exhibition as ours stimulates improvements of great value to all mankind. We are under many obligations to you, gentlemen, and we trust that the result of the Exhibition may prove beneficial to you, and that it will also tend to the promotion of the Mechanic Arts.

I am also happy to recognize the presence of a number of our friends who have accepted our invitation to meet with us at this time. Among them are some of the past Officers of our Association, who labored well in their day; some of our Honorary members, who have done us good service; some who are well known in the councils of our State and City, with our friends of the Press, who have always had a kind word for us.

To these, and to all who honor us with their presence this evening, I extend a cordial greeting.

The Rev. Jacob M. Manning, D. D., of the Old South Church, then asked a blessing, after which a cordial invitation was given to partake of the hospitalities of the occasion.

After proper attention had been paid to the elegant entertainment, the President called upon Hon. Albert J. Wright, the Vice-President, to officiate as Toast-Master.

A series of appropriate toasts elicited some exceedingly interesting remarks from several of the gentlemen present, among whom were Ex-Governor Washburn, Mayor Shurtleff, Col. M. P. Wilder, Dr. George B. Loring, of Salem, Hon. Richard Frothingham, Hon. A. K. P. Welch, of Cambridge, Hon. L. J. Knowles, of Worcester, Ex-Mayor Wightman, and others.

Mr. Charles F. Austin, who acted as Chief-Marshal, with a competent corps of assistants, rendered most efficient service, adding greatly to the comfort and pleasure of the guests.

The Levee closed at an early hour, having proved a very successful and agreeable occasion, adding one more to the already long list of such gatherings held under the auspices of the MASSACHUSETTS CHARITABLE MECHANIC ASSOCIATION.

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